#798361601

ID: 88076634

TJ
809.96
.N3
K76
2012
V.2

Final Environmental Impact Statement (FEIS) For The K Road Moapa Solar Facility Clark County, Nevada

Appendices A - P

MARCH 2012

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

Prepared for:

U.S. BUREAU OF INDIAN AFFAIRS
U.S. BUREAU OF LAND MANAGEMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
U.S. ARMY CORPS OF ENGINEERS

On behalf of:

The Moapa Band of Paiutes

US Army Corps of Engineers

Report Prepared By:

ARCADIS-US, Inc.

6923001

This page intended to be blank.

Appendices

A. **Policy Rules and Regulations (Detail)**

B. **Biological Opinion / Desert Tortoise Translocation Plan**

C. **Weed Management Plan**

D. **Stormwater Pollution Prevention Plan**

E. **Spill Prevention Control and Countermeasure Plan**

F. **Site Restoration Plan**

G. **Cultural Resources Documentation - Section 106 Consultation**

H. **Visual Contrast Rating Worksheets**

I. **Air Quality Tables**

J. **Biological Assessment – Section 7 Consultation under ESA**

K. **U.S. Army Corps of Engineers Jurisdictional Determination Report and Consultation**

L. **Scoping and Public Meeting Report**

M. **Public Comment and Agency Correspondence**

N. **Environmental Hazardous Radius Report**

O. **Bird and Bat Conservation Strategy**

P. **Decommissioning Plan**

This page intended to be blank.

Appendix A

Policy Rules and Regulations (Detail)

This page intended to be blank.

1.1. Policies and Programs

1.1.1. Relationship to Federal Policies, Plans, and Programs

The Proposed Action under NEPA, requires an EIS. The following sections summarize the federal, state, and local policies, plans, and laws that apply to the Proposed Action and the Proposed Project within and on federal lands. It should be noted that the portion of the Proposed Project wholly within the Reservation would be regulated under the Tribe's Environmental Policy Ordinance in accordance with NEPA and under federal actions that apply on Tribal lands. Further, the portion of the Proposed Project that is on the Reservation and within the BLM managed utility corridor as well as only on BLM land will be regulated under county, state, and federal action that apply to the BLM. The below synopsis of local, state and federal laws and regulations is meant to be all encompassing for the entire Proposed Project which includes the Proposed Action.

1.1.2. General

1.1.2.1. National Environmental Policy Act (NEPA)

NEPA requires federal agencies to review the effects of their actions on the natural and human made environment prior to taking action. The law requires all federal agencies to consider the direct, indirect, and cumulative effects of proposals and reasonable alternatives prior to making a decision. NEPA requires that all federal actions that could result in a significant effect on the environment to be subject to review by federal, state, local, and tribal environmental authorities, as well as by other affected parties and interested citizens.

1.1.2.2. Administrative Procedures Act, Title 5 U.S.C. Sections 701 – 706.

The Administrative Procedures Act, Title 5, U.S.C. Chapter 5, Sections 701-706, requires that U.S. Governmental agencies provide an opportunity for notice and comment when creating rules and regulations implementing major pieces of legislation.

1.1.2.3. Executive Order 11514 (National Environmental Policy Act).

This order requires federal agencies to continually monitor and control their activities to protect and enhance the quality of the environment. The order also requires federal agencies to develop procedures to (1) ensure that the public is informed and understands the federal plans and programs with potential environmental impact and (2) obtain the views of interested parties.

1.1.2.4. Department of Energy Organization Act, 42 U.S.C. 7101.

The DOE Organization Act establishes the statutory responsibility of the DOE to (1) ensure incorporation of national environmental protection goals in the formulation of

energy programs; and (2) to advance the goal of restoring, protecting, and enhancing environmental quality, as well as assuring public health and safety.

1.1.3. Air Quality and Climate

1.1.3.1. Clean Air Act

The U.S. Environmental Protection Agency (EPA) implements and enforces the requirements of most federal environmental laws. EPA Region 9 administers federal air programs in Nevada, including oversight of the State of Nevada Department of Environmental Protection (NDEP) and Clark County Department of Air Quality and Environmental Management (DAQEM) which are responsible for implementing those programs within their jurisdiction. The Clean Air Act (CAA), most recently amended in 1990, provides EPA with the legal authority to regulate air pollution from stationary, area, and mobile sources.

1.1.3.2. Council on Environmental Quality – Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions

In February 2010, the Council on Environmental Quality (CEQ) issued a draft guidance memorandum for public consideration and comment on the ways in which federal agencies consider the effects of GHG emissions and climate change under NEPA. The CEQ indicated that climate change issues arise in relation to the consideration of the GHG emissions effects of:

(1) a proposed action and alternative actions; and

(2) the relationship of climate change effects to a proposed action or alternatives, including the relationship to proposal design, environmental impacts, mitigation, and adaptation measures.

The guidance advises federal agencies to consider, in scoping their NEPA analyses, whether analysis of the direct and indirect GHG emissions from their proposed actions may provide meaningful information to decision makers and the public. Specifically, if a proposed action would be reasonably anticipated to cause direct emissions of 25,000 metric tons or more of CO2-equivalent (CO2-e) GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. For long-term actions that have annual direct emissions of less than 25,000 metric tons of CO2 -e, federal agencies are encouraged to consider whether the action's long-term emissions should receive similar analysis. This threshold is not proposed as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHGs.

PV solar energy systems do not directly generate GHG emissions, but the equipment manufacturing process does emit GHGs. In addition, on-site construction and operations using combustion engines can specifically generate CO_2 and CH_4, although at levels much lower than equivalent coal, oil, or natural gas-fired electrical generation facilities.

1.1.3.3. Clark County Department of Air Quality and Environmental Management

The Clark County DAQEM has been delegated the authority, under the provisions of Nevada Revised Statute (NRS) 445B.500 and by direction of the Governor of the state of Nevada and the Clark County Board of County Commissioners, to implement and enforce an air pollution control program in Clark County, Nevada. DAQEM applies and enforces the Air Quality Regulations, which establish requirements for sources that emit or release air contaminants into the atmosphere (Clark County 2008). Air quality regulations applicable to the Proposed Action include:

- Section 12, Preconstruction Review for New or Modified Stationary Source: This section sets the rules for the installation or construction of any new stationary source or modification to an existing stationary source. The owner or operator of the stationary source shall apply for an Authority to Construct Certificate prior to commencing construction in accordance with the requirements set forth in this section.
- Section 41, Fugitive Dust: This section establishes that any person engaged in activities involving grading, clearing of land, public or private construction, the operation of machines and equipment, the grading of roads, trenching operations, the operation and use of unpaved parking facilities, and operation and use of raceways for motor vehicles shall take all reasonable precautions to abate fugitive dust from becoming airborne from such activities. Reasonable precautions may include sprinkling, compacting, enclosure, chemical, or asphalt sealing, cleaning up, sweeping, or such other measures as the control officer may specify to accomplish satisfactory results. Reasonable precautions are not limited to the conditions agreed upon by the DAQEM permit for the Proposed Action.
- Section 45, Idling of Diesel- Powered Motor Vehicles: This section sets the rules for diesel- powered motor vehicle idling. A person shall not idle the engine of a diesel truck or a diesel bus for more than 15 consecutive minutes.
- Section 90, Fugitive Dust from Open Areas and Vacant Lots (90.2.1): This section sets rules for open areas and vacant lots greater than 5,000 square feet that are disturbed by any means, including motor vehicles and/or off-road motor vehicles. The rule charges that owners of open areas shall implement all control measures necessary to limit the disturbance of open areas and vacant lots in accordance with the requirements of the regulation. Finally, it requires the use of reclaimed water to the greatest extent practicable to conserve water.
- Section 94, Permitting and Dust Control for Construction Activities: The purposes of this section are: (a) to limit the emission of particulate matter into the ambient air by preventing, controlling, and mitigating fugitive dust from construction activities; and

(b) to establish fugitive dust control standards for Clark County, define reasonable precautions for the prevention and control of fugitive dust from all construction activities, and to establish thresholds for enforcement of these standards.

1.1.3.4. Nevada Administrative Code: Chapter 445B, Water Controls; Air Pollution:

These regulations (1) implement both state and federal (EPA) clean air statutes and (2) identify the requirements for permits for each air pollution source (unless it is specifically exempted) as well as ongoing monitoring requirements.

- Sections 287-366, Permits to Construct and Operating Permits
- Sections 339-351, Toxic or Hazardous Air Contaminants
- Sections 354-357, Visible Emissions
- Sections 360-367, Emissions of Particulate Matter
- Sections 381-395, Miscellaneous (includes open and incinerator burning)

1.1.4. Soils

1.1.4.1. Farmland Protection Policy Act

Federal regulations pertaining to agricultural land and soils include the Farmland Protection Policy Act. The program identifies and designates lands according to categories defined in the Farmland Protection Policy Act (7 U.S.C. 4201, et seq.) Agricultural regulations, however, do not pertain to the Proposed Project because it is not located on prime farmland.

1.1.5. Water Resources

As there are no perennial surface waters in the California Wash basin, there is no local governing water authority for the area. The management and allocation of water resources for the basin is under the authority of the Nevada Division of Water Resources (NDWR) State Engineer. The NDWR is responsible for the appropriation and reallocation of public waters, including quantifying existing water rights, metering water use, and distributing water in accordance with court decrees.

1.1.5.1. Clean Water Act

The Clean Water Act of 1977, which amended the Federal Water Pollution Control Act, was enacted to "restore and maintain the chemical, physical, and biological integrity of the Nation's water." The Clean Water Act prohibits the "discharge of toxic pollutants in toxic amounts" to navigable waters of the United States. Section 313 of the Clean Water Act, as amended, requires all branches of the federal government engaged in any activity that might result in a discharge or runoff of pollutants to surface waters to comply with federal, state, interstate, and local requirements.

In addition to setting water quality standards for the nation's waterways, the Clean Water Act supplies guidelines and limitations for effluent discharges from point-source discharges, and provides authority for the EPA to implement the National Pollutant Discharge Elimination System permitting program. The National Pollutant Discharge Elimination System Program is administered by the Water Management Division of the EPA pursuant to regulations in 40 CFR Part 122 et seq. Nevada has not applied for National Pollutant Discharge Elimination System authority from the EPA. Thus, all National Pollutant Discharge Elimination System permits required for the Proposed Project would be obtained through the EPA Region 9 (40 CFR Part 122 et seq.).

Sections 401 and 405 of the Water Quality Act of 1987 added Section 402(p) to the Clean Water Act. Section 402(p) requires that the EPA establish regulations for issuing permits for storm water discharges associated with industrial activity. Although any storm water discharge associated with industrial activity requires a National Pollutant Discharge Elimination System permit application, regulations implementing a separate storm water permit application process have not yet been adopted by the EPA.

1.1.5.2. Safe Drinking Water Act of 1974, 42 U.S.C. 300f, et seq.

The Safe Drinking Water Act's primary objective is to protect the quality of public water supplies and all sources of drinking water. The state of Nevada, with the EPA's authorization, regulates public drinking water supplies by establishing and enforcing drinking water standards and by developing and implementing aquifer and water source protection regulations. These regulations proclaim maximum contaminant levels, including those for radioactivity in community water systems, which are defined as public water systems that serve at least 15 service connections used by year-round residents or regularly serve at least 24 year-round residents. Other programs established by the Safe Drinking Water Act include the Sole Source Aquifer Program, the Wellhead Protection Program, the Underground Injection Control Program, and Environmental Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level, and Transuranic Radioactive Wastes.

1.1.5.3. Nevada Revised Statute 444A.420 and Nevada Administrative Code 445A.118-225

The NRS and Nevada Administrative Code (NAC) regulate surface water within the state and also assign responsibility for implementing CWA §401 through 402 and 303(d) in Nevada. NDEP's Bureau of Water Pollution Control is the state entity in charge of governing the water statutes. Nevada establishes both numeric and narrative water quality standards for surface waters. None of the drainage features that would be encountered by the Proposed Project in Nevada have established numeric water quality standards.

1.1.5.4. Construction General Stormwater Permit

The CWA §402 regulates construction-related stormwater discharges to surface waters through the NPDES program. Region 9 of the EPA manages construction stormwater permits on Tribal lands. In Nevada, the NDEP has been delegated the authority by the EPA to administer the NPDES program through the Bureau of Water Pollution Control for other federal lands. The construction stormwater permit is required for all sites greater than 1 acre. A waiver is possible if the site is less than 5 acres and meets certain stipulations. The permit will require the Applicant to prepare and enforce a Stormwater Pollution Prevention Plan (SWPPP) during construction. Nevada does not have specific regulations pertaining to the treatment of fuel spills during construction. All petroleum-contaminated materials must be disposed of in accordance with applicable state and local regulations.

1.1.5.5. Section 401 Permitting

Applicants applying for USACE permit coverage under Section 404 of the CWA for actions that could result in any discharge into waters of the United States must obtain a water quality certification from the EPA in which the action is proposed. In Nevada, 401 permitting has been delegated to the NDEP, Bureau of Water Quality Planning and to the EPA on Reservation land.

1.1.5.6. Section 404 Permitting

Section 404(a) of the Clean Water Act authorizes the U.S. Army Corps of Engineers to issue permits regulating the discharge of dredged or fill material into the waters of the United States, including wetlands. The main premise of the Section 404 regulatory program is that no discharge of dredged or fill material can be permitted if a practicable alternative exists which is less damaging to the aquatic environment or if the nation's waters would be significantly degraded.

1.1.5.7. National Flood Insurance Program

The National Flood Insurance Program (NFIP) is administered by the Federal Emergency Management Agency (FEMA), a component of the U.S. Department of Homeland Security. The NFIP is a federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. Participation in the NFIP is based on an agreement between local communities and the federal government which states that if a community adopts and enforces a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas, the federal government makes flood insurance available within the community as a financial protection against flood losses.

In support of the NFIP, FEMA identifies flood hazard areas throughout the United States and its territories by producing Flood Hazard Boundary maps, Flood Insurance Rate maps, and Flood Boundary and Floodway maps. Several areas of flood hazards are

commonly identified on these maps. One of these areas is the Special Flood Hazard Area, or high-risk area, defined as any land that would be inundated by a flood having a 1 percent chance of occurring in any given year (also referred to as the base flood). No flood hazard areas have been mapped within the Proposed Project area.

1.1.5.8. Floodplain Management

The Clark County Regional Flood Control District has a comprehensive floodplain management program in place that includes a regulatory program that establishes standards and requirements for flood hazard management. Clark County has adopted revised "Uniform Regulations for the Control of Drainage" that comply with national FEMA standards and provide regulatory control over land development in floodplain areas. These regulations outline when and where Floodplain Use Permits are required, as well as the process for review of local development permit applications in compliance with these regulations.

1.1.5.9. Executive Order 11988 (Floodplain Management).

This order requires federal agencies to establish procedures to ensure that the potential effects of flood hazards and floodplain management are considered for actions undertaken in a floodplain. It also requires that floodplain impacts be avoided to the extent practicable.

1.1.5.10. Executive Order 11990 (Protection of Wetlands).

This order requires governmental agencies to avoid, to the extent practicable, any short- and long-term adverse impacts on wetlands wherever there is a practicable alternative.

1.1.6. Cultural and Historic Resources

1.1.6.1. National Historic Preservation Act of 1966, 16 U.S.C. 470, et seq.

The National Historic Preservation Act of 1966, as amended, provides that sites with significant national historic value be placed on the National Register of Historic Places. If a federal activity may impact a historic property resource, a required consultation with the Advisory Council on Historic Preservation will usually generate a memorandum of agreement, including stipulations that must be followed to minimize adverse impacts. Coordination with the State Historic Preservation Officer are also undertaken to ensure that potentially significant sites are properly identified and appropriate mitigative actions implemented.

1.1.6.2. Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa-470ll.

The Archaeological Resources Protection Act of 1979 protects archaeological resources located on U.S. public lands and American Indian lands. The requirements concerning protection of archaeological resources contained in the Archaeological Resources Protection Act should be addressed prior to site disturbances by consultation with the

Department of Interior Advisory Council on Historic Preservation and the State Historic Preservation Officer.

1.1.6.3. Archaeological and Historic Preservation Act of 1974, 16 U.S.C. 469.

The Archaeological and Historic Preservation Act of 1974 protects sites that have historic and prehistoric importance.

1.1.6.4. American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996 et seq.

The American Indian Religious Freedom Act of 1978 is a policy statement intended to reaffirm American Indian rights regarding religious freedom. The purpose of the Act is to ensure that American Indians have access to and protection of physical locations and resources that are sacred and sometimes required for the practice of American Indian religious rites and ceremonies.

1.1.6.5. Native American Graves Protection and Repatriation Act of 1990, 25 U.S.C. 3001.

The Native American Graves Protection and Repatriation Act of 1990 governs ownership or control of American Indian remains and cultural items which are excavated or discovered on federal or tribal lands.

1.1.6.6. Antiquities Act of 1906, 16 U.S.C. 431, et seq.

The Antiquities Act of 1906 protects historic and prehistoric ruins, monuments, and antiquities, including paleontological resources, on federally controlled lands.

1.1.6.7. Paleontological Resources Preservation Act of 2009 (Subtitle D of the Omnibus Public Land Management Act of 2009, Pub. L. 111-011)

The Paleontological Resources Preservation Act (PRPA) provides protection for vertebrate (i.e., animals with backbones) paleontological resources on federal lands by limiting the collection of vertebrate fossils and scientifically important fossils to permitted and qualified researchers.

1.1.6.8. Executive Order 11593 (May 13, 1971) (National Historic Preservation).

This order directs all federal agencies to (1) make an inventory of their holdings and nominate, in cooperation with the state liaison officer for historic preservation, all sites, buildings, districts, and objects that appear to qualify for listing on the National Register of Historic Places, a file of cultural resources of national, regional, state, or local significance kept by the U.S. Department of the Interior's National Park Service; and (2) assure that no site, etc., which might qualify for the National Register is sold, demolished, or substantially altered.

1.1.6.9. The National Trails System Act (P.L. 90-543, as amended through P.L. 111-11, March 30, 2009) (also found in *United States Code*, Volume 16, Sections 1241-1251)

In order to provide for the ever-increasing outdoor recreation needs of an expanding population and in order to promote the preservation of, public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas and historic resources of the Nation, trails should be established (i) primarily, near the urban areas of the Nation, and (ii) secondarily, within scenic areas and along historic travel routes of the Nation which are often more remotely located.

The purpose of this Act is to provide the means for attaining these objectives by instituting a national system of recreation, scenic and historic trails, by designating the Appalachian Trail and the Pacific Crest Trail as the initial components of that system, and by prescribing the methods by which, and standards according to which, additional components may be added to the system, such as the Old Spanish National Historic Trail.

1.1.7. Biological Resources

1.1.7.1. Endangered Species Act of 1973, 16 U.S.C. 1531-1543.

The Endangered Species Act of 1973, as amended, is intended to prevent the further decline of endangered and threatened species and to restore these species and their habitats. The Act is jointly administered by the U.S. Departments of Commerce and Interior. Section 7 of the Act requires consultation to determine whether endangered and threatened species are known to have critical habitats onsite or in the vicinity of the proposed action.

1.1.7.2. Fish and Wildlife Conservation Act of 1980, 16 U.S.C. 2901.

The Fish and Wildlife Conservation Act of 1980 encourages all federal entities (in cooperation with the public) to protect and conserve the nation's fish and wildlife.

1.1.7.3. Fish and Wildlife Coordination Act, 16 U.S.C.661, 48 Stat. 401 as amended.

The Fish and Wildlife Coordination Act promotes more effectual planning and cooperation between federal, state, public, and private agencies for the conservation and rehabilitation of the nation's fish and wildlife and authorizes the U.S. Department of Interior to provide assistance.

1.1.7.4. Migratory Bird Treaty Act of 1918, 16 U.S.C. 703, et seq., 40 Stat. 755.

The Migratory Bird Treaty Act of 1918 governs the taking, killing, or possession of migratory birds. The Act states that it is unlawful to take, pursue, molest, or disturb bald (American) and golden eagles, their nests, or their eggs anywhere in the United States.

1.1.7.5. Bald Eagle Protection Act of 1940, 16 U.S.C. 668, enacted by 54 Stat. 250.

The Bald Eagle Protection Act of 1940 protects bald and golden eagles by prohibiting the taking, possession, and commerce of such birds and establishes civil penalties for violation of this Act.

1.1.7.6. Public Lands - Wild Horses and Burros, 85 Stat.649, enacted by Pub.L.No.92-195.

The Public Lands - Wild Horses and Burros Act requires the protection, management, and control of wild free-roaming horses and burros on public lands. As a stated policy, free-roaming horses and burros are prohibited from capture, branding, harassment, or death and they are to be considered an integral part of the natural system of the public lands.

1.1.7.7. Executive Order 13112 Invasive Plants and Noxious Weeds

Invasive plants and noxious weeds are managed on public lands by the BLM under the direction of the National Invasive Species Council (NISC) established in 1999 (Executive Order 13112). This statute defines invasive species as "…an alien (non-native) species whose introduction does, or is likely to cause, economic or environmental harm or harm to human health" (NISC 2008). In addition, much of the management of invasive plants and the listing of noxious weeds is regulated by the U.S. Department of Agriculture (USDA) under the Federal Noxious Weed Act (7 U.S.C. 2801 et seq. 1974). Invasive weeds are defined for this report as species of non-native plants that are included on the USDA weed lists for Nevada (USDA 2009).

1.1.7.8. Nevada Revised Statute 527.060–527.120

Nevada Revised Statute (NRS) 527, supplemented by the Nevada Administrative Code (NAC), protects and regulates the removal of Christmas trees, yuccas, and cacti for commercial purposes. Such removal or possession requires a permit and tags from the Nevada Spur Forester Fire Warden, Nevada Division of Forestry. Chapter 527 gives the Nevada Natural Heritage Commission the ability to protect native flora by listing them on their protected species list:

> "It is unlawful . . . to cut, destroy, mutilate, remove or possess any Christmas tree, cactus, yucca or branches thereof, or knowingly transport or sell any from any of the lands owned by or under the jurisdiction of the State of Nevada or its counties, or on any reserved or unreserved lands owned by the United States, or from any privately owned lands, without written permission from the legal owner, or his duly authorized agent, specifying locality by legal land description and number of plants to be removed or possessed" (NRS 527.101).

"The removal or possession of cacti, yucca, and evergreen trees requires a permit and tags from the Nevada State Forester Firewarden, Nevada Division of Forestry" (NRS 527.091).

1.1.8. Realty

1.1.8.1. Nevada Revised Statute 501

NRS 501, supplemented by the NAC, is the Nevada state law that covers administration and enforcement of wildlife resources within the state. The administering agency is the Nevada Department of Wildlife (NDOW). Any authorizations for impacts to protected species would be processed through the NDOW.

1.1.8.2. Clark County Comprehensive Plan

This general plan provides long-term planning goals and policies for Clark County's future growth. The Clark County Comprehensive Plan has goals and policies related to land use, energy, and utilities which are applicable to the Proposed Project. Clark County's Utilities Policy UT 1-6 encourages the development of transmission capability and interconnectivity for distributed energy, cogeneration, and alternative energy sources, including regional interconnectivity and transmission capability. Energy Policy CV7-1.6 states that "Clark County supports partnerships and cooperation with local, regional, and federal agencies to further promote energy conservation and efficiency, renewable energy projects, and sustainable development" (Clark County 2006).

1.1.8.3. Las Vegas Resource Management Plan

The Las Vegas Resource Management Plan (LVRMP) contains ROW development guidelines for the authorization of ROWs on public lands for a variety of uses including electrical transmission lines, electrical power plants and substations, and related power distribution lines. ROW authorizations are processed on a case-by-case basis by BLM as proposals for certain uses are received. The LVRMP emphasizes protecting unique habitats for threatened, endangered, and special status species, while providing various uses including recreation, community growth, and mineral exploration and development (BLM 1998a).

The Proposed Project is consistent with the guidance in the LVRMP, which authorizes rights-of-way for utility scale renewable energy projects on public lands managed by the BLM-Las Vegas Field Office. A land use plan amendment is not required to consider the Proposed Project.

1.1.9. Noise

1.1.9.1. Noise Control Act of 1972, 42 U.S.C. 4901-4918.

The Noise Control Act of 1972, as amended, directs all federal agencies to carry out, "to the fullest extent within their authority," programs within their jurisdictions in a manner

that furthers a national policy of promoting an environment free from noise that jeopardizes health and welfare.

1.1.9.2. Clark County Ordinance

Sec 30.68.020 (h): Requirements of this section do not apply to construction and/or demolition activities when conducted during daytime hours. Sec 30.68.020 (b): The maximum permissible sound pressure level of any continuous, regular, or frequency source of sound produced by any activity shall be established by time period and type of zoning district (per Table 30.68-1 in the Clark County regulations).

Sec 30.68.020 (e): Impulsive type noises shall be subject to the standards described in Table 30.68-2, provided they are capable of being accurately measured with the equipment described in the ordinance (e.g., a sound level meter and associated octave band filter).

1.1.9.3. Federal Aviation Administration

Federal Aviation Administration (FAA) regulations address potential aircraft obstruction for structures taller than 200 feet or within 20,000 feet of an airport. Specifically, Federal Regulation Title 14, Part 77, establishes standards and notification requirements for objects that have the potential to affect navigable airspace. These standards are intended to: (1) evaluate the effect of the construction or alteration of structures on airport operating procedures; (2) determine if there is a potential hazard to air navigation; and (3) identify measures to enhance safety. Specifically, the FAA requires notification through the filing of FAA Form 7460, Notice of Proposed Construction or Alteration, if any of the criteria identified at 14 CFR Part 77.13 are met with regards to a proposed action.

1.1.10. Social/Economic

1.1.10.1. Executive Order 12898 (Environmental Justice).

This order directs federal agencies to achieve Environmental Justice by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions. The order creates an Interagency Working Group on Environmental Justice and directs each federal agency to develop strategies within prescribed time limits to identify and address Environmental Justice concerns.

1.1.10.2. Title VI of the Civil Rights Act of 1964

Title VI of the Civil Rights Act of 1964 Prohibits discrimination on the basis of race, color, or nationality in all programs or activities receiving federal financial assistance.

1.1.10.3. Executive Order 13166

Executive Order 13166 requires all recipients of federal funds to provide meaningful access to persons who are limited in their English proficiency (LEP). The US Department of Justice defines LEP individuals as those "who do not speak English as their primary language and who have a limited ability to read, write, speak, or understand English"

1.1.11. Management Areas

1.1.11.1. National Wildlife Refuge System Administration Act of 1966, 42 U.S.C. 668dd.

The National Wildlife Refuge System Administration Act of 1966 provides guidelines and directives for the administration and management of all lands within the system, including "wildlife refuges, areas for the protection and conservation of fish and wildlife that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, or waterfowl production areas." The Secretary of the Interior is authorized to permit by regulations the use of any area within the system provided "such uses are compatible with the major purposes for which such areas were established."

1.1.12. Aesthetics

1.1.12.1. National Environmental Policy Act of 1969

The Proposed Project is required to comply with NEPA, 43 U.S.C. 4321 Sections 101 and 102 and the LVRMP Objectives and Management Directions.

1.1.13. Human Health and Hazardous Materials

1.1.13.1. Hazardous Waste and Solid Waste Amendments Act of 1984, 42 U.S.C. 6901.

The Hazardous Waste and Solid Waste Amendments Act of 1984 are amendments to the Resource Conservation and Recovery Act that authorize regulations or require that regulations be promulgated on waste minimization, land disposal of hazardous wastes, and underground storage tanks.

1.1.13.2. Executive Order 12088 [Federal Compliance with Pollution Control Standards (October13,1978), as amended by Executive Order 12580 (January 23, 1987)].

Federal Compliance with Pollution Control Standards requires federal agencies, including the BIA, to comply with applicable administrative and procedural pollution control standards established by, but not limited to, the Clean Air Act, the Noise Control Act, the Clean Water Act, the Safe Drinking Water Act, the Toxic Substances Control Act, and the Resource Conservation and Recovery Act.

1.1.13.3. Executive Order 12580 (Superfund Implementation).

This order delegates to the heads of executive departments and agencies the responsibility for undertaking remedial actions for releases, or threatened releases that are not on the National Priority List. This order also delegates the responsibility of removal actions, other than emergencies where the release is from any facility under the jurisdiction or control of executive departments and agencies, to the heads of executive departments and agencies.

1.1.13.4. Occupational Safety and Health Act of 1970, 29 U.S.C. 657, et seq.

The Occupational Safety and Health Act of 1970 establishes the authority for assuring, so far as possible, safe and healthful working conditions for employees. The Occupational Safety and Health Act regulations establish specific standards telling employers what must be done to achieve a safe and healthful working environment.

1.1.13.5. Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601.

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended, provides a statutory framework for the cleanup of waste sites containing hazardous substances and, as amended by the Superfund Amendments and Reauthorization Act, provides an emergency response program in the event of a release (or threat of a release) of a hazardous substance to the environment. The Comprehensive Environmental Response, Compensation and Liability Act's goal is to provide for response and remediation of environmental problems that are not adequately covered by permit programs of other environmental laws, such as the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, and the Atomic Energy Act.

1.1.13.6. Federal Insecticide, Fungicide, and Rodenticide Act of 1972, 7 U.S.C. 136.

The Federal Insecticide, Fungicide, and Rodenticide Act of 1972 governs the storage, use, and disposal of pesticides through product labeling, registration, and user certification.

1.1.13.7. Toxic Substances Control Act of 1976, 15 U.S.C. 2601, et seq.

The Toxic Substances Control Act of 1976 provides the EPA with the authority to require testing of both new and old chemical substances entering the environment and to regulate them where necessary. The Act also regulates the treatment, storage, and disposal of certain toxic substances not regulated by the Resource Conservation and Recovery Act or other statutes, particularly polychlorinated biphenyls (PCB), chlorofluorocarbons, and asbestos.

1.1.13.8. Executive Order 12856 (Right-to-Know Laws and Pollution Prevention Requirements).

This order requires all federal agencies to reduce and report toxic chemicals entering any waste stream; improve emergency planning, response, and accident notification; and encourage clean technologies and testing of innovative prevention technologies. The order also provides that federal agencies are persons for purposes of the Emergency Planning and Community Right-to-Know (Superfund Amendments and Reauthorization Act Title III), which obliges agencies to meet the requirements of the Act.

1.1.13.9. Clark County Fire Department

The Clark County Fire Department maintains first responder responsibility for incidents within unincorporated areas of Clark County. Specific responsibilities include:

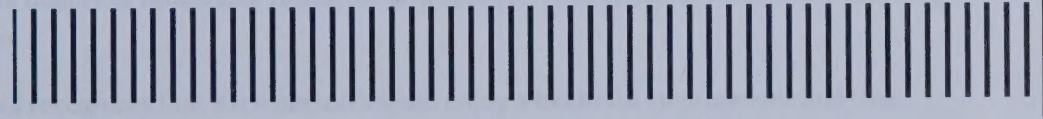
- Urban fire services;
- Rural fire services;
- Aircraft rescue fire fighting;
- Emergency medical services including basic, intermediate, and advanced life support (paramedic program);
- Hazardous materials response team;
- Fire prevention;
- Fire investigation;
- Disaster and emergency preparedness;
- Public education; and
- Technical rescue including Urban Search and Rescue (FEMA National Response Team), Confined Space Rescue, Heavy Rescue, and Swift Water Rescue. Clark County Office of Emergency Management Code, Chapter 3.04.

The Clark County Office of Emergency Management created an integrated emergency management public safety division that facilitates the coordination of multi-agency public safety projects, including emergency management planning, preparation activities such as training and exercises, response support coordination during emergencies (Ord. 2762 (part), 2002; Ord. 1881 §1 (part), 1996). The Office of Emergency Management provides coordination support for the mitigation, preparation, response and recovery activities necessary for the protection of lives and property within Clark County.

This page intended to be blank.

Appendix A

Attachment A: Tribal Environmental Policy Ordinance



This page intended to be blank.

Moapa Band of Paiutes Tribal Environmental Policy Ordinance

Section 1: Tribal Declaration of Environmental Policy

(A) The Moapa Band of Paiutes Business Council, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Tribal Government, in cooperation with Federal, State and local governments, and other concerned public and private organizations, to use all practicable means and measures in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Tribal members.

(B) In order to carry out the policy set forth in this ordinance, it is the continuing responsibility of the Tribal Government to use all practicable means, consistent with other essential considerations of Tribal policy, to improve and coordinate Tribal plans, functions, programs, and resources to the end that the Tribe may:

(1) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(2) Assure for all Tribal members safe, healthful, productive, and esthetically and culturally pleasing surroundings;

(3) Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(4) Preserve important historic, cultural, and natural aspects of our Tribal heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(5) Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(6) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(C) The Business Council recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

Section 2: Tribe Shall Study the Environmental Impacts of Major Projects

(A) The Business Council authorizes and directs that, to the fullest extent possible:

(1) The policies, regulations, and laws of the Moapa Band of Paiutes shall be interpreted and administered in accordance with the policies set forth in this ordinance, and

(2) The Tribal government shall:

(a) Utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment;

(b) Require that all major projects on the reservation that are: (1) Greater than 10 acres, and; (2) Do not require the approval of the Bureau of Indian Affairs, have a detailed Environmental Impact Statement by the Tribal Business Council on:

(i) The environmental impact of the proposed action,

(ii) Any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) Alternatives to the proposed action,

(iv) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the Tribal Business Council shall consult with and obtain the comments of the general Tribal membership of the Moapa Band of Paiutes.

(c) Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(d) Recognize the worldwide and long-range character of environmental problems and, where consistent with the policy of the Moapa Band of Paiutes, lend appropriate support to initiatives, resolutions, and programs designed to maximize Federal and State cooperation in anticipating and preventing a decline in the quality of mankind's world environment; and

(e) Initiate and utilize ecological information in the planning and development of resource-oriented projects.

Section 3: Scoping

(A) There shall be an early process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed major project. Scope consists of the range of actions, alternatives, and impacts to be considered in an Environmental Impact Statement. The scope of an individual statement may depend on its relationships to other statements. As soon as practicable

after its decision to prepare an Environmental Impact Statement the Business Council shall publish a notice to the Tribal membership that the Business Council will begin an environmental study. Within thirty days after the publication of this notice the Business Council shall hold a public meeting during which Tribal members may give comments regarding the proposed major project and the Environmental Impact Statement. After this public hearing the Business Council shall determine the scope of the Environmental Impact Statement for the major project.

Section 4: Environmental Assessment and Finding of No Significant Impact

(A) After the public meeting held pursuant to Section 3, if the Business Council determines that the major project will have no significant impact on the environment it may decide to draft an Environmental Assessment. The Environmental Assessment shall be a concise document that may be viewed by any Tribal member that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact. "Finding of No significant Impact" means a document by the Business Council briefly presenting the reasons why a major project will not have a significant effect on the human environment and for which an Environmental Impact Statement therefore will not be prepared.

(B) After the Business Council drafts an Environmental Assessment of Finding of No Significant Impact it shall publish a notice to the Tribal membership that an Environmental Assessment has been prepared. The Business Council shall give Tribal members 15 days to comment of the draft Environmental Assessment.

(C) After the 15 day notice period the Business Council may: (1) Issue a final Environmental Assessment or Finding of No Significant Impact, or; (2) draft a new Environmental Assessment.

Section 5: Environmental Impact Statement Scope

(A) The Scope of the required environmental study consists of the range of actions, alternatives, and impacts to be considered in an Environmental Impact Statement. The scope of an individual statement may depend on its relationships to other statements. To determine the scope of Environmental Impact Statements, the Business Council shall consider 3 types of actions, 3 types of alternatives, and 3 types of impacts. They include:

(1) Actions (other than unconnected single actions) which may be:

(a)Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. Actions are connected if they:

(i) Automatically trigger other actions which may require environmental impact statements.

(ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.

(iii) Are interdependent parts of a larger action and depend on the larger action for their justification.

(b) Cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement.

(c) Similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography. An agency may wish to analyze these actions in the same impact statement. It should do so when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement.

(2) Alternatives, which include:

(a) No action alternative.

(b) Other reasonable courses of actions.

(c) Mitigation measures (not in the proposed action).

(3) Impacts, which may be: (1) Direct; (2) indirect; (3) cumulative.

(B) To achieve the purposes set forth in this ordinance the Business Council shall prepare Environmental Impact Statements in the following manner:

(1) Environmental Impact Statements shall be analytic rather than encyclopedic.

(2) Impacts shall be discussed in proportion to their significance. There shall be only brief discussion of other than significant issues. As in a finding of no significant impact, there should be only enough discussion to show why more study is not warranted.

(3) Environmental Impact Statements shall be kept concise and shall be no longer than absolutely necessary to comply with this ordinance. Length should vary first with potential environmental problems and then with project size.

(4) Environmental Impact Statements shall state how alternatives considered in it and decisions based on it will or will not achieve the requirements of this ordinance and other environmental laws and policies.

(5) The range of alternatives discussed in Environmental Impact Statements shall encompass those to be considered by the Business Council.

(6) Environmental Impact Statements shall serve as the means of assessing the environmental impact of proposed major projects, rather than justifying decisions already made. Accordingly, a major project may not begin construction until: (1) The Business Council issues a Finding of No Significant

Impact, or; (2) A final Environmental Impact Statement has been approved by the Business Council pursuant to this ordinance, and a Notice to Proceed is issued pursuant to Section 20 of this ordinance.

(C) If it is determined that the major project effects a Federally listed endangered or threatened species protected under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) a Mitigation Plan will be required. The Mitigation Plan shall ensure that there is adequate minimizing and mitigating of the effects on threatened and endangered species. This Mitigation Plan is in addition to any other requirement that may apply under Federal or State laws and regulations.

(D) If it is determined that the major project effects areas with cultural, historic or religious importance to the Moapa Band of Paiutes a Cultural Mitigation Plan will be required. The Cultural Mitigation Plan shall ensure that there is adequate minimizing and mitigating of the effects on areas or items of cultural, historic or religious importance. This Cultural Mitigation Plan is in addition to any other requirement that may apply under Federal or State laws and regulations.

Section 6: Draft, final, and supplemental statements

(A) Environmental impact statements shall be prepared in two stages and may be supplemented.

(B) Draft Environmental Impact Statements shall be prepared in accordance with the scope decided upon by the Business Council. The draft statement must fulfill and satisfy to the fullest extent possible the requirements established for statements this ordinance. If a draft statement is so inadequate as to preclude meaningful analysis, the Business Council shall prepare and circulate a revised draft of the appropriate portion. The Business Council shall make every effort to disclose and discuss at appropriate points in the draft statement all major points of view on the environmental impacts of the alternatives including the proposed action.

(C) The Business Council shall publish a notice to the Tribal membership that an Environmental Impact Statement has been prepared. The Business Council shall give Tribal members 15 days to comment on the draft Environmental Impact Statement. The Business Council shall also hold meeting for Tribal members within this 15 day period in order to review the findings of the draft environmental impact statement.

(D) Final environmental impact statements shall respond to comments received by Tribal members. The Business Council shall discuss at appropriate points in the final statement any responsible opposing view which was not adequately discussed in the draft statement and shall indicate the Business Council's response to the issues raised.

(E) The Business Council shall prepare supplements to either draft or final environmental impact statements if:

(1) The Business Council makes substantial changes in the proposed action that are relevant to environmental concerns; or

(2) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

(F) The Business Council may also prepare supplements when it determines that the purposes of this ordinance will be furthered by doing so. The Business Council shall prepare, circulate, and file a supplement to a statement in the same fashion as a draft and final statement unless alternative procedures are approved by the Business Council.

Section 7: Recommended format

(A) The Business Council shall use a format for environmental impact statements which will encourage good analysis and clear presentation of the alternatives including the proposed action. The following standard format for environmental impact statements should be followed unless the Business Council determines that there is a compelling reason to do otherwise:

(1) Cover sheet.

(2) Summary.

(3) Table of contents.

(4) Purpose of and need for action.

(5) Alternatives including proposed action.

(6) Affected environment.

(7) Environmental consequences.

(8) List of preparers.

(9) List of Agencies, Organizations, and persons to whom copies of the statement are sent.

(10) Index.

(11) Appendices (if any).

Section 8: Cover sheet

(A) The cover sheet shall not exceed one page. It shall include:

(1) The title of the proposed action that is the subject of the statement (and if appropriate the titles of related cooperating agency actions).

(2) The name, address, and telephone number of the person within the Tribal government who can supply further information.

(3) A designation of the statement as a draft, final, or draft or final supplement.

(4) A one paragraph abstract of the statement.

(5) The date by which comments must be received

Section 9: Summary

(A) Each Environmental Impact Statement shall contain a summary which adequately and accurately summarizes the statement. The summary shall stress the major conclusions, areas of controversy (including issues raised by Tribal members), and the issues to be resolved (including the choice among alternatives). The summary will normally not exceed 15 pages.

Section 10: Purpose and Need

(A) The statement shall briefly specify the underlying purpose and need to which the Business Council is responding in proposing the alternatives including the proposed action.

Section 11: Alternatives Including the Proposed Action

(A) This section is the heart of the Environmental Impact Statement. Based on the information and analysis presented in the sections on the Affected Environment and the Environmental Consequences, it should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the Business Council and the public. In this section the Business Council shall:

(1) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

(2) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.

(3) Include reasonable alternatives not within the jurisdiction of the Business Council.

(4) Include the alternative of no action.

(5) Identify the Business Council's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement.

(6) Include appropriate mitigation measures not already included in the proposed action or alternatives.

Section 12: Affected Environment

(A) The Environmental Impact Statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. The descriptions shall be no longer than is necessary to understand the effects of the alternatives. Data and analyses in a statement shall be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced. It shall avoid useless bulk in statements and shall concentrate effort

and attention on important issues. Verbose descriptions of the affected environment are themselves no measure of the adequacy of an Environmental Impact Statement.

Section 13: Environmental Consequences

(A) This section forms the scientific and analytic basis for the comparisons under this ordinance. It shall consolidate the discussions of those elements required by this ordinance. The discussion will include the environmental impacts of the alternatives including the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented. It shall include discussions of:

(1) Direct effects and their significance.

(2) Indirect effects and their significance.

(3) Possible conflicts between the proposed action and the objectives of Tribal, Federal, regional, State, and local land use plans, policies and controls for the area concerned.

(4) The environmental effects of alternatives including the proposed action.

(5) Energy requirements and conservation potential of various alternatives and mitigation measures.

(6) Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures.

(7) Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures.

(8) Means to mitigate adverse environmental impacts.

Section 14: List of Preparers

(A) The Environmental Impact Statement shall list the names, together with their qualifications (expertise, experience, professional disciplines), of the persons who were primarily responsible for preparing the environmental impact statement or significant background papers, including basic components of the statement. Where possible the persons who are responsible for a particular analysis, including analyses in background papers, shall be identified. Normally the list will not exceed two pages.

Section 15: Appendix

(A) If the Business Council prepares an appendix to an environmental impact statement the appendix shall:

(1) Consist of material prepared in connection with an Environmental Impact Statement (as distinct from material which is not so prepared and which is incorporated by reference.

(2) Normally consist of material which substantiates any analysis fundamental to the impact statement.

(3) Normally be analytic and relevant to the decision to be made.

(4) Be circulated with the Environmental Impact Statement or be readily available on request.

(5) Contain any Mitigation Plan or Cultural Mitigation Plan required under this ordinance.

Section 16: Tiering

(A) The Business Council is encouraged to tier their environmental impact statements to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review. Whenever a broad environmental impact statement has been prepared and a subsequent statement or environmental assessment is then prepared on an action included within the entire project area (such as a site specific action) the subsequent statement or environmental assessment need only summarize the issues discussed in the broader statement and incorporate discussions from the broader statement by reference and shall concentrate on the issues specific to the subsequent action. The subsequent document shall state where the earlier document is available. Tiering may also be appropriate for different stages of actions.

Section 17: Methodology and Scientific Accuracy

(A) The Business Council shall insure the professional integrity, including scientific integrity, of the discussions and analyses in Environmental Impact Statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement.

Section 18: Environmental Review and Consultation Requirements

(A) To the fullest extent possible, the Business Council shall prepare Draft Environmental Impact Statements concurrently with and integrated with environmental impact analyses and related surveys and studies required by the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), the National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.), the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), and other environmental review laws.

(B) The Draft Environmental Impact Statement shall list all Federal permits, licenses, and other entitlements which must be obtained in implementing the proposal. If it is uncertain whether a Federal permit, license, or other entitlement is necessary, the draft environmental impact statement shall so indicate.

Section 19: Cost of Study

(A) All costs required by the Business Council to comply with this ordinance shall be paid by the proponent of the major project or lessee of Tribal lands. These costs include:

(1) All costs and fees charged by the consultants, scientists and engineers conducting the required studies under this ordinance;

(2) All costs and fees charged by the attorneys, consultants, scientists and engineers drafting the required documents under this ordinance, and;

(3) All costs and fees charged by the attorneys, consultants, scientists and engineers advising the Business Council on the sufficiency of the required documents and studies under this ordinance.

Section 20: Standard of Tribal Review of the Study

(A) The Business Council may look to the following authorities to determine the scope and completeness of the Study:

(1) Guidance from the United States Council on Environmental Quality;

(2) The decisions of the United States Ninth Circuit Court of Appeals and the United States Supreme Court, and;

(3) Guidance from the United States Bureau of Indian Affairs.

Section 21: Notice to Proceed

(A) No major projects that are: (1) Greater than 10 acres, and; (2) Do not require the approval of the Bureau of Indian Affairs may begin construction without a Final Environmental Impact Statement or a Finding of No Significant Impact approved by the Business Council.

(1) "Begin construction" shall mean begun, or caused to begin, a continuous program of actual on-site construction of the major project. This includes the moving or removing rocks, soils, or vegetation or the addition or permanent features on major project location.

(B) After an Environmental Impact Statement has been approved by the Business Council for a major project the Business Council shall issue a written Notice to Proceed to the project proponent.

(C) The Notice to Proceed issued by Business Council does relieve the project proponent of any other obligations under a contract or lease agreement, or Tribal, Federal and State laws that may apply to the major project

Section 22: Cultural Mitigation Requirements

(A) If at any time during the development, construction or operation of a Major Project on the Reservation either human remains or cultural artifacts are discovered such human remains or cultural artifacts cannot be disturbed until the Tribe has given written approval and all other federal laws have been complied with. At the Tribe's discretion, it may require that before human remains or cultural

artifacts are removed that, at the project proponent or lessee of Tribal lands expense, a Tribal Elder or other representative of the Tribe of the Tribe's choosing removes the cultural artifacts or human remains in accordance with Tribal customs.

This page intended to be blank.

Appendix B

Biological Opinion / Desert Tortoise Translocation Plan

This page intended to be blank.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Nevada Fish and Wildlife Office
4701 North Torrey Pines Drive
Las Vegas, Nevada 89130
Ph: (702) 515-5230 ~ Fax: (702) 515-5231

Date: March 7, 2012
File No. 84320-2011-F-0430 &
1-5-05-FW-536, Tier 5

Memorandum

To: Superintendent, Southern Paiute Agency, Bureau of Indian Affairs, St. George, Utah

From: State Supervisor, Nevada Fish and Wildlife Office, Reno, Nevada

Subject: Biological Opinion for the K Road Moapa Solar Project, Moapa River Indian Reservation, Clark County, Nevada

This transmits the Fish and Wildlife Service's (Service) biological opinion for the K Road Moapa Solar Project. The Bureau of Indian Affairs (BIA) and Bureau of Land Management (BLM) determined that the proposed approval of a lease for the project by BIA and issuance of a right-of-way grant by BLM for the subject project on BLM administered lands may adversely affect the Mojave desert tortoise (*Gopherus agassizii*), a species listed as threatened under the Endangered Species Act of 1973, as amended (Act; 16 U.S.C. 1531 *et seq.*). The Moapa dace (*Moapa coriacea*), a species listed as endangered under the Act, may be adversely affected by groundwater withdrawal required for the project. No critical habitat will be adversely affected by the project.

The attached biological opinion is based on information provided in your memoranda dated September 20, 2011, and November 22, 2011; the September 2011 biological assessment for the project; January 30, 2006, programmatic biological opinion (File No. 1-5-05-FW-536); discussions and electronic transmissions among the Service, BIA, consultants (ARCADIS), and BLM; December 2011 desert tortoise translocation plan; *Administrative Draft Environmental Impact Statement, K Road Solar Facility, October 2011*; BIA and BLM comments on the January 20, 2012, draft biological opinion; and our files. A complete project file of this consultation is available in the Service's Nevada Fish and Wildlife Office in Las Vegas.

If you require additional assistance, please contact Michael Burroughs in the Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230. Please reference File No. 84320-2011-F-0430 in future correspondence concerning this consultation.

Edward D. Koch

cc:
Chairman, Moapa Band of Paiutes, Moapa, Nevada
Supervisory Biologist - Habitat, Nevada Department of Wildlife, Las Vegas, Nevada
Assistant Field Office Manager, Renewable Resources, Bureau of Land Management, Field Office, Las Vegas, Nevada
Amy Heuslein, Bureau of Indian Affairs, Western Region, Phoenix, Arizona

ATTACHMENT

FINAL BIOLOGICAL OPINION
FILE NOS. 84320-2011-F-0430 & 1-5-95-FW-536, TIER 5

Table of Contents

FINAL BIOLOGICAL OPINION 1

A. CONSULTATION HISTORY 3

B. DESCRIPTION OF THE PROPOSED ACTION 4

1. ACCESS ROADS 6

2. TRANSMISSION LINES 6

3. SOLAR PLANT CONSTRUCTION 7

4. PROJECT WATER REQUIREMENT 8

5. DESERT TORTOISE TRANSLOCATION- SOLAR FACILITY SITE 8

6. CONSERVATION MEASURES 8

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATION 12

C. STATUS OF THE SPECIES- RANGEWIDE 13

1. MOAPA DACE 13

a. Warm Springs Natural Area 14
b. Current Distribution and Abundance 14

2. DESERT TORTOISE 15

a. Legal/Listing History 15
b. Species Account 16
c. Recovery Plan for the Desert Tortoise 18
d. Recovery Units 19
e. Population Trends 25
f. 5-Year Review 26
g. Habitat and Population Connectivity 27
h. Current Threats 29
i. Major Actions outside the Action Area and within the Affected Recovery Unit 33
j. Habitat Conservation Plans (HCPs) in the Affected Recovery Unit 35

3. STATUS OF CRITICAL HABITAT OF THE DESERT TORTOISE 36

D. ENVIRONMENTAL BASELINE 36

Action Area 36

1. STATUS OF THE MOAPA DACE IN THE ACTION AREA 37

2. FACTORS AFFECTING THE MOAPA DACE IN THE ACTION AREA 37
a. Groundwater Use Memorandum of Agreement 37
b. Habitat Acquisition 40
c. Habitat Improvement Projects and Predator Control 40
d. Wildfires 40
3. STATUS OF THE DESERT TORTOISE IN THE ACTION AREA 40
a. Habitat 40
b. Desert Tortoises in the Action Area 41
c. Desert Tortoise Translocation Areas 43
d. Conclusions- Status of the Recipient and Evaluation Areas 46
4. FACTORS AFFECTING THE DESERT TORTOISE IN THE ACTION AREA 46
a. Kern River Gas Transmission (KRGT) Project 46
b. Calpine Corporation Natural Gas-Fired Power Plant 47
c. Sampling and Geotechnical Investigation for Proposed Cement Plant 47
d. Tribal Travel Plaza Water Pipeline 48
e. UNEV Pipeline 48
f. Other Existing Linear Disturbances and Anthropogenic Features 49
g. BLM Programmatic Biological Opinions in the Action Area 49
E. EFFECTS OF THE PROPOSED ACTION 49
1. MOAPA DACE 50
2. DESERT TORTOISE 50
INCIDENTAL TAKE STATEMENT 65
A. AMOUNT AND EXTENT OF TAKE 66
1. Moapa Dace 66
2. Desert Tortoise 67
a. Areas Associated with Construction and O&M Activities 67
b. Areas Associated with Translocation 68
B. EFFECT OF TAKE 69
C. REASONABLE AND PRUDENT MEASURES (RPM) WITH TERMS AND CONDITIONS 69
1. Moapa Dace 69
2. Desert Tortoise 70
CONSERVATION RECOMMENDATIONS 77
REINITIATION NOTICE 78
LITERATURE CITED 79
APPENDIX A. DESERT TORTOISE TRANSLOCATION PLAN 90
APPENDIX B. BLM REMUNERATION FEE PAYMENT FORM 91

A. CONSULTATION HISTORY

On January 20, 2006, the Fish and Wildlife Service (Service) concluded intra-Service consultation and issued a programmatic biological opinion (PBO) (File No. 1-5-05-FW-536) for execution of the *Proposed Muddy River Memorandum of Agreement (MOA) Regarding the Groundwater Withdrawal of 16,100 acre-feet per year (afy) from the Regional Carbonate Aquifer in the Coyote Spring Valley and California Wash Basins and Establishment of Conservation Measures for the Moapa Dace, Clark County, Nevada.* As the sole Federal signatory to the MOA, the Service would carry out actions and commitments in the MOA that may adversely affect the federally listed as endangered Moapa dace (*Moapa coriacea*). The Service anticipated that all future Federal actions and formal consultations that involve withdrawal of groundwater under the MOA be tiered to the PBO; therefore, this consultation is tiered to the 2006 PBO.

On September 9, 2010, the Service met with the Moapa River Band of Paiutes (Tribe), Bureau of Land Management (BLM), and K Road (Applicant) to discuss the proposed solar project. During the meeting, various options for environmental compliance were discussed including section 7 consultation through the Bureau of Indian Affairs (BIA) and the Tribe's Section 17 Corporation Charter.

On February 16, 2011, the Service met with BLM and the Applicant to discuss the project, Mohave desert tortoise (*Gopherus agassizii*) and potential avian surveys, access, transmission line alignment, and specific features of the project.

Beginning August 23, 2011, the Service, BIA, BLM, and Department of Interior staff participated in weekly conference calls to discuss the progress of the project, particularly the environmental impact statement (EIS) and biological opinion.

On August 26, 2011, the BIA provided a draft biological assessment to the Service for review. The Service reviewed the document and provided comments to BIA on September 2, 2011.

On September 20, 2011, the BIA submitted a final biological assessment to the Service and request for formal consultation on the proposed solar project. The Service determined that the information was sufficient and initiated formal consultation on that date.

On November 28, 2011, the Service received BIA's November 22, 2011, request to include potential adverse effects to the Moapa dace that may occur as a result of project activities that involve use of groundwater from aquifers that provide habitat for the species. BIA also requested an opportunity to review a draft biological opinion.

On December 8, 2011, the BIA provided a draft desert tortoise translocation plan for the proposed project. The Service reviewed the draft and provided verbal comments to the BIA, BLM, Tribe, Applicant, and consultants during a meeting in Las Vegas, Nevada on December 15, 2011. Written Service comments and a draft of the proposed action section of this biological opinion were provided to the BIA and BLM on December 22, 2011; additional comments were provided by the Desert Tortoise Recovery Office on December 30, 2011.

On December 28, 2011, the Service requested additional information on the project from the BIA and ARCADIS. On January 4, 2012, ARCADIS provided the requested information by electronic mail.

On January 5, 2012, BLM proposed five additional conservation measures to minimize potential effects to the desert tortoise that may result from project activities on lands they administer. ARCADIS submitted a revised biological assessment to the Service by electronic mail providing updated information on the project and its effects on the Moapa dace and desert tortoise.

On January 10, 2012, the Service and BIA agreed to extend the consultation period an additional 30 days to allow review of the draft biological opinion by the Federal agencies and others; our response to comments including all necessary edits, and second review and finalization of the document. The regulatory 135-day deadline for the consultation is February 2, 2012; the 30-day extension period ends on March 3, 2012.

On January 11, 2012, the BIA provided a final desert tortoise translocation plan to the Service.

On January 20, 2012, the Service provided a draft biological opinion to the BIA and BLM. Written comments were provided to the Service on the draft biological opinion by BLM on January 29, 2012, and BIA and ARCADIS on February 2, 3, and 14, 2012. Additional BIA and Tribe comments were provided to the Service by conference call on February 16 and 28, 2012, and email on February 24, 2012, and March 6, 2012.

B. DESCRIPTION OF THE PROPOSED ACTION

The Applicant has entered into an agreement with the Tribe to lease their land for the purpose of constructing a photovoltaic (PV) solar generating station on 2,141 acres of land in Clark County, Nevada. The proposed project is located within the Mojave Desert approximately 30 miles northeast of Las Vegas, Nevada within the Moapa River Indian Reservation (Reservation), Clark County, Nevada. The electricity generated from the solar plant would be sold to market via a Power Purchase Agreement. The lease of Tribal land and grant of easement for right-of-way (ROW) for the access road, 12 kV powerline, and water line require BIA approval, a Federal action under section 7 of the Endangered Species Act of 1973, as amended (Act). The Applicant also applied for ROW grants from the BLM for an up to 500 kilovolt (kV) transmission line and improvement of an existing access road. The BIA is the lead Federal agency for the project with additional Federal actions proposed by the BLM (ROW grants).

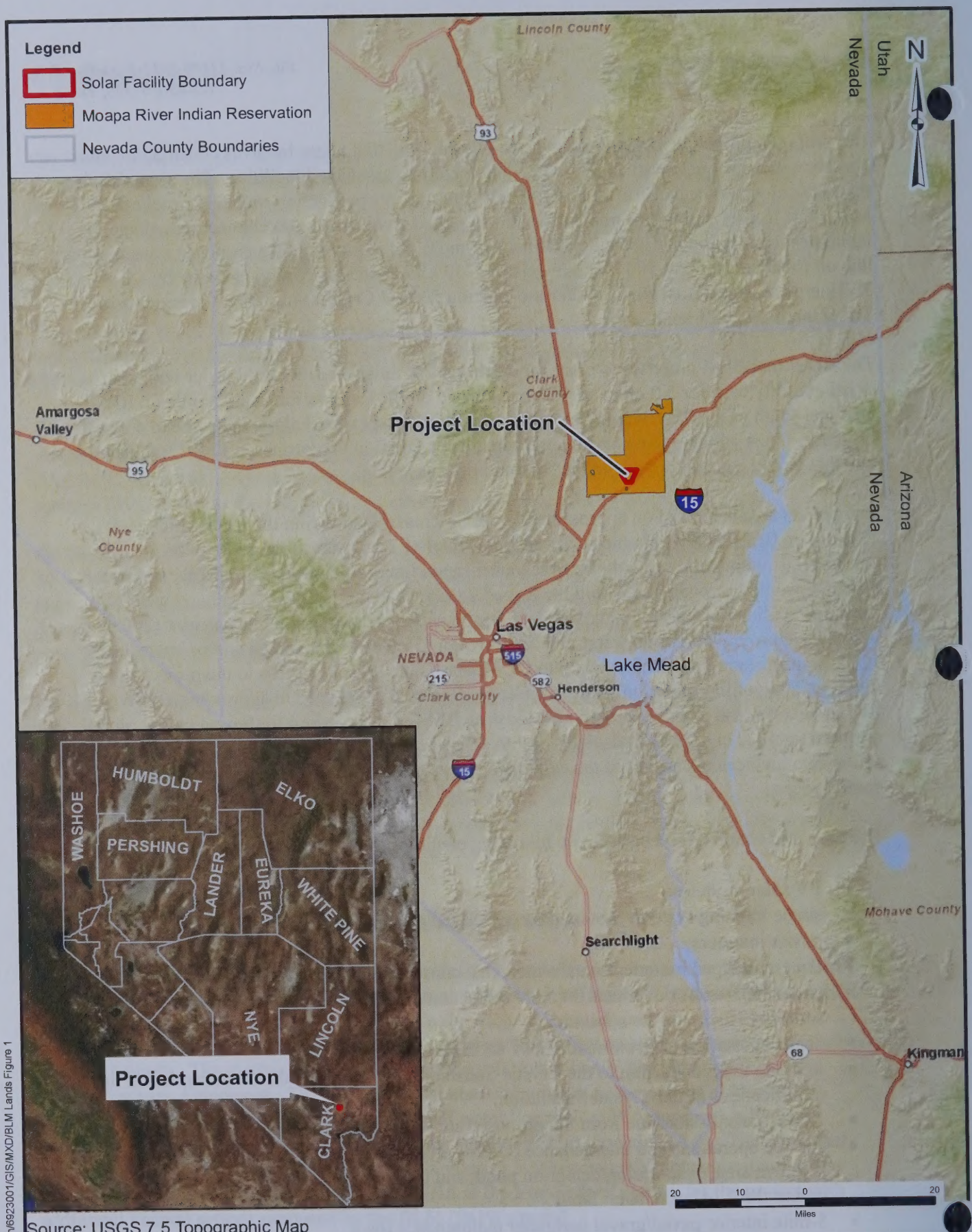
The proposed project would be built in three phases. The first phase involves construction and operation of a 150-megawatt (MW) solar plant including associated facilities. The second and third phases would be construction of 100 MW solar energy production each for a total of 350 MW. The facility will utilize transformers to step up the voltage to interconnection voltage to facilitate a connection of the facility with one or more of the following: a proposed transmission line on tribal lands (up to 500 kV), the existing 230 kV Crystal Substation operated by NVEnergy outside Tribal lands, and/or the existing 500 kV Crystal Substation located outside Tribal lands on BLM land.

The ROW that BLM proposes to grant for electrical transmission line would occur within an existing utility corridor 5.0 miles of which is located on the Reservation and 0.5 mile on BLM land just south of the Reservation boundary. The ROW grant would allow the Tribe to connect its Travel Plaza with the transmission grid via the construction of a proposed 12 kV transmission line that would connect directly to the solar facility substation.

The project area is located on approximately 2,241 acres of land within the Reservation and 12 acres on BLM land within the utility corridor (total of 2,153 acres; Figure 1). All components, with the exception of power transmission lines, access roads, firebreak, and water pipeline, would be developed within the fenced 2,000-acre solar facility. Power and water transmission lines include an approximate 5.5-mile electric transmission line corridor (200 feet wide), an approximate 1-mile water pipeline corridor (25 feet wide), and an approximate 3-mile 12 kV transmission line (25 feet wide) to the Moapa Travel Plaza. Access to the project site is via an existing utility road from North Las Vegas Boulevard upgraded to approximately 16 to 24 feet in width and is entirely within the existing BLM utility corridor for the exception of the northern terminal end where it deviates east to enter the proposed solar facility. The proposed action also includes expansion of the existing access road, and desert tortoise relocation and control areas.

The proposed action would include the following elements:

- PV solar modules;
- single tracking systems mounted on embedded pier ballast or foundations;
- power inverters;
- three-phase pad mounted transformers that convert the output of each inverter to 34.5 kV;
- an underground or overhead 34.5 kV collection system to convey electricity from the solar field to the onsite substation;
- onsite substation (approximately 14.7 acres);
- 5.5-mile interconnection to the Crystal Substation via an up to 500 kV transmission line; modifications to the Crystal Substation;
- 12 kV transmission line from the proposed substation to the Moapa Travel Plaza;
- 40-acre operations and maintenance (O&M) area with a building, parking area, temporary laydown area, evaporation/detention pond, and construction associated facilities located within the 2,141-acre solar facility;
- 5-mile interior paved/gravel perimeter maintenance road;



Source: USGS 7.5 Topographic Map

Map Document:Austin/69230001/GIS/MXD/BLM Lands Figure 1

ARCADIS	K Road Power San Diego, California K Road Moapa Solar Facility	Moapa River Indian Reservation Project Location Map	January 2012 FIGURE 1

- project access via an existing improved road mostly within the BLM utility corridor, approximately 7 miles long;
- drainage controls to facilitate and/or slow drainage to existing ephemeral washes;
- stormwater controls within drainage features to slow flash flood flow to nearby railroad culverts;
- approximately 7.14 miles of perimeter fence;
- 20-foot wide fire break around exterior of the perimeter fence (17.3 acres);
- 1 mile of water pipeline; and
- desert tortoise translocation and control areas.

The onsite substation would include an uninhabited control house, switchgear and conductor structures, and up to three transformers, each approximately 50 feet wide by 25 feet long by 20 feet high. The Crystal substation would be upgraded to accommodate equipment required to connect the project to the energy grid. The Crystal substation upgrade would occur within the existing fenced area. Clearing and grubbing would take place within the 2,141-acre solar facility for PV module installation and would be minimized as practical for engineering purposes.

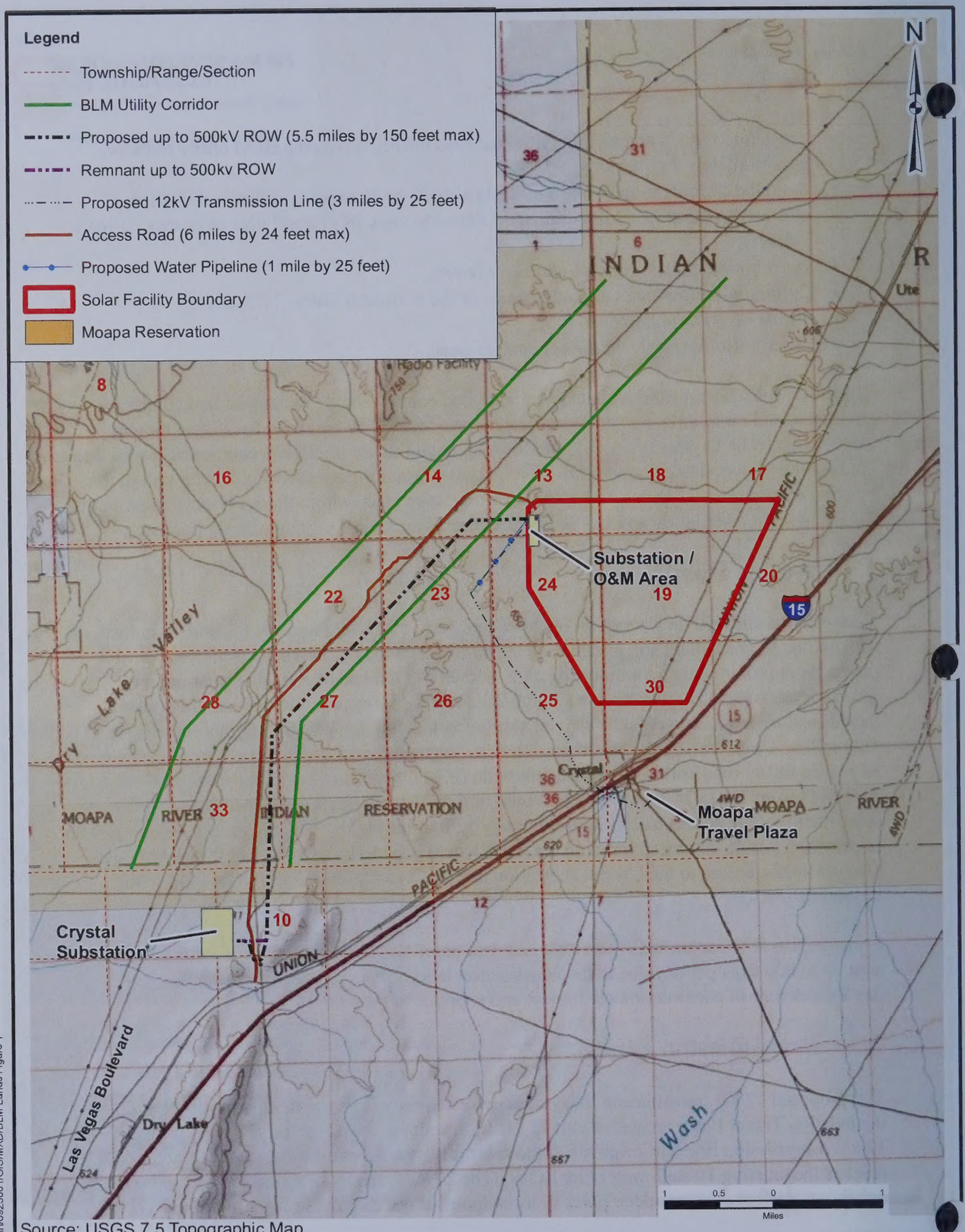
1. Access Roads

Access to the site will be via exit 64 off Interstate 15 (I-15), U.S. Highway 93, and an immediate turn on Las Vegas Boulevard, a state maintained frontage road. Las Vegas Boulevard is well paved for approximately 5.74 miles from the I-15 exit to the end of Nevada Department of Transportation (NDOT) jurisdiction (Figure 2). From Las Vegas Boulevard, an unimproved paved road continues towards the Crystal substation to a northerly turn at approximately 1.96 miles. Upon leaving the paved portion (Las Vegas Boulevard), the access road becomes an improved utility road within the 4,000-foot wide BLM utility corridor. The access road would be improved from 16- to 24-feet wide and would terminate at the northwest corner of the proposed solar facility. The access road is approximately 5.90 miles to the boundary access point where an improved 0.5-mile entrance road onto the mesa would need to be constructed. Existing roads provide public access to the Crystal substation and Reservation boundary 0.5 mile north of Crystal substation.

Construction of the solar facility would result in a short-term increase in traffic volume in the area up to 800 trips per day due to the construction labor force and approximately 76 trips per day for delivery of construction equipment and supplies to the site.

2. Transmission Lines

The proposed 12 kV transmission line would deliver energy from the main transmission grid to the existing Travel Plaza located at exit 75 off I-15, south and west of the proposed project. The 12 kV transmission line will originate at the solar facility substation and travel southwest until it reaches the existing 10-inch water line ROW. The 12 kV transmission line will then parallel this existing waterline along wooden poles to its endpoint at the electrical substation of the Travel



Source: USGS 7.5 Topographic Map

ARCADIS	K Road Power San Diego, California K Road Moapa Solar Facility	Moapa River Indian Reservation Proposed Project Facilities Map	February 2012 FIGURE 2

Map Document:Austin\6923001\GIS\MXD\BLM Lands Figure 1

Plaza. The proposed 12 kV transmission line is approximately 3 miles in length and is located on Tribal land.

An up to 500kV transmission line would be located on both Tribal and BLM lands and would be single circuit and supported on H-style or potentially a 3-pole design steel poles/towers. Although final transmission line design has not been completed, an estimated 23 steel structures would likely be required for the construction of the transmission line. The proposed project has been designed to deliver power to both the Nevada and California energy market.

3. Solar Plant Construction

The onsite construction workforce would consist of scientists, laborers, craftsmen, supervisory personnel, and construction management personnel. On average, 250 to 300 workers would be onsite with a maximum of 400 during the high peak of construction activities. Construction would occur 6 days a week, 10 hours per day. Additional hours may be necessary to make up for schedule and weather delays. Due to extreme heat during summer months, cement crews (for example), may need to work during night time hours to avoid extreme heat that would complicate curing and drying of cement.

Desert tortoise surveys (clearance) would be performed before the onset of construction. Authorized desert tortoise biologists and monitors would be present during the entire construction period, focusing on access roads and other activity areas outside the solar facility following construction of the fence. During the desert tortoise clearance, authorized desert tortoise biologists, assisted by monitors would survey to locate and move desert tortoises in harm's way. Desert tortoises would be translocated to designated areas within the Reservation. Activities associated with handling and moving desert tortoise would follow guidelines outlined in the translocation plan (Appendix A), the Desert Tortoise Field Manual (Service 2009), and this biological opinion. Tortoise fencing would be installed around the entire 2,141 acre solar facility to ensure no ingress of desert tortoises to the site.

Temporary construction fencing may be used in work areas where tortoises are abundant as determined by survey data and desert tortoise observations. Temporary fencing would be buried to prevent tortoises from burrowing underneath the fence.

Following the desert tortoise clearance for the access road and completion of either partial or full desert tortoise fencing of the proposed solar facility site, the activities to upgrade the road and prepare the laydown area (parking, O&M area, and substation) would begin. Activities described below would only occur during Phase I of the construction process and would not be repeated for Phases II and III.

Organic matter would be mulched onsite or hauled to the Moapa compost facility located nearby. Construction entrance and exit gates would be established. A tire wash area would be established near the Crystal Substation prior to entering the Reservation to prevent soil and material from leaving the project site and to limit the introduction of weeds and invasive species. Water required for construction would be supplied by an existing well on the Reservation and

transported by a water truck. Equipment storage and laydown areas would be compacted to aid in dust suppression and the perimeter would be staked and marked with signs. The main facility road would be prepared with aggregate or similar road base material.

4. Project Water Requirement

The proposed project would require approximately 380 acre-feet of groundwater during the proposed 5-year construction phase (72 afy for 5 years) and up to 40 afy for O&M after construction. During the construction period, approximately 95 percent of the water will be used for dust control along the access road and within the active construction site. A small percentage of water may be used for personnel needs and cleaning modules soiled during construction. A dust palliative may be used if approved by the Service and land owners or managers.

5. Desert tortoise Translocation- Solar Facility Site

The Applicant, as directed by the Tribe in coordination with the Service, will capture and relocate tortoises from the 2,000-acre solar site. The Tribe selected a 6,000-acre site to receive displaced tortoises and two additional evaluation areas for short-term use (i.e., 5 years or less) associated with translocation of the tortoises described. The Tribe will conserve the established home ranges of most translocated tortoises, up to 6,000 acres, until the lease on the 2,000-acre solar site ends and the Service determines that the site is available and suitable. Alternatively the Tribe proposes to designate a preserve and manage the 6,000-acre site in perpetuity for tortoise conservation. Both of these options are analyzed in this biological opinion, and the Tribe and BIA will state their intention to the Service before desert tortoises are removed from the solar facility site. On March 5, 2012, the Tribe passed a Resolution committing to establish a conservation area and adopt one of the options above.

6. Conservation Measures

The project is designed to minimize ground disturbance wherever practicable. Onsite vegetation will be cleared only when required for construction of roads, PV modules, electrical equipment, and safety reasons. Existing access roads will be utilized as much as practicable. The access roads within the solar facility boundary will be kept to a minimum width and located in such a way to allow quick access throughout the site. Water trucks will be used to minimize dust during construction.

The majority of the site would drain naturally as sheet flow to the existing large, ephemeral drainage features. The drainage plan would use berm-like structures to slow excessive runoff on the eastern side of the site where elevations decrease and flatten prior to discharge through multiple culverts placed within the existing railroad levee. Given the caliche soil and rock cliffs prevalent through most major drainage areas, the use of rock weir structures may be utilized to slow flash flood flow prior to discharge under the existing railroad culverts to prevent structural damage. No offsite drainage enters the mesa or the proposed solar facility; therefore, only surface sheet flow will occur from the improved areas.

The Applicant will monitor construction under the direction of authorized desert tortoise biologists approved by the Service. BIA proposes Measures 1-15 and BLM proposes Measures 16-20.

1. Oversee establishment and functionality of sediment control devices as outlined in the Storm Water Pollution Prevention Plan. Ensure that Best Management Practices (BMPs) are in place and working properly on a weekly basis. [BMPs are taken from the administrative draft environmental impact statement (ARCADIS 2011b) and included with the measures below.]

2. Awareness training for desert tortoise will be provided to all construction crews and operations staff (performed by qualified personnel only).

3. Authorized desert tortoise biologists will monitor the construction activities daily during the initial site disturbance (including installation of permanent desert tortoise exclusion fencing) and at weekly intervals after all tortoises have been removed from the site. Exclusionary fencing will be checked monthly and after any substantial rain event to ensure that they are effective barriers for desert tortoise.

4. Implement controls at entry locations to facilitate weed management and invasive species control in order to minimize infestation to the project area from an outside source. Trucks and other large equipment will be randomly checked before entering the site for any invasive species debris or seed.

5. A desert tortoise translocation plan shall be developed, reviewed and accepted by the BIA and Tribe, and approved by the Service. This plan will include the following details at a minimum: translocation protocol; health assessment protocol for all tortoise and disease testing of individuals that will be translocated greater than 1,640 feet; recipient and control area habitat assessment and suitability; assessment of desert tortoise population and health in the recipient areas; and preparation of a disposition plan for displaced animals.

6. Pre-construction surveys will be conducted to test all desert tortoises that will be translocated. Testing will entail blood work to determine whether any desert tortoises suffer from upper respiratory tract disease (URTD) and will include radio tagging each desert tortoise found to aid in relocation during preconstruction clearance surveys.

7. A permanent perimeter exclusionary fence will be constructed around the solar facility boundary. Construction of the exclusionary fence will be monitored by an authorized desert tortoise biologist in order to eliminate impacts to tortoise burrows or live tortoises.

8. Pre-construction clearance surveys to remove tortoise from the construction area will be conducted following Service protocol (2009). These surveys will include surveying mowing areas, brush clearing areas, and ground-disturbance areas. Surveyors will search for desert tortoises and noxious weeds to prevent the spread of noxious plant species.

9. Roving biological monitors will be assigned to monitor the various construction crews in active construction areas until 100-percent tortoise clearance is confirmed. Biological monitoring would also occur during access road improvements.

10. Mitigation for permanent impacts to desert tortoise habitat would occur through an acreage-based compensatory formula developed in consultation with the Service. Compensatory mitigation includes payment at a rate of $810 per acre, if paid before March 1, 2013, into a Tribal conservation fund ($1,734,210) and to the BLM for 12 acres of disturbance ($9,720). These funds will be utilized for desert tortoise recovery actions agreed upon by the Tribe lease and the Service, and BLM and Service for fees paid to BLM.

11. Tribal remuneration funds will be utilized for desert tortoise recovery actions on the Reservation as agreed upon the Tribe, BIA, and Service. Use of Tribal remuneration funds may include (1) designating a 6,000-acre desert tortoise conservation area in perpetuity, managing the site for tortoise conservation in accordance with the Service-approved management plan, and long-term tortoise monitoring , or (2) designating a 6,000-acre desert tortoise conservation area for the term of the lease with the Applicant, funding for habitat improvement projects such as improved forage, road closures and rehabilitation, removal or control of non-native plants, involvement of Tribal members in conservation efforts, and data collection from translocated tortoises to understand tortoise behavior including response to translocation as a result of the project. Projected costs for management of the 6,000-acre conserved area will be identified in the management plan and actions funded by a portion of the Tribal remuneration fees as agreed upon by the Tribe and Service.

    BLM funds will be used for management actions on BLM-administered land to benefit the desert tortoise over time. BLM actions may involve habitat acquisition, population or habitat enhancement, increasing knowledge of the species biological requirements, reducing loss of individual animals, documenting the species' current status and trends, and preserving distinct population attributes. Specific actions to be funded with BLM funds will be determined during annual meetings between BLM and the Service to identify and prioritize management actions, which may include implementation of range-wide tortoise monitoring, and other management actions (BLM and Service 2010).

    The fee rate will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) on January 31st of each year. The next adjustment shall occur on January 31, 2013 and will become effective March 1, 2013 Fees assessed or collected for projects covered under this biological opinion after March 1st of each year will be adjusted based on the CPI-U. Information on the CPI-U can be found on the Internet at: http://stats.bls.gov/news.release/cpi.nws.htm.

    The payment to BLM shall be accompanied by the attached Section 7 Land Disturbance Fee Payment Form (Appendix B), and completed by the payee.

12. An authorized desert tortoise biologist must be present during maintenance activities if occurring outside of the perimeter fence. Pre-maintenance clearance surveys followed by temporary exclusionary fencing also is required if the maintenance action requires ground or vegetation disturbance. Authorized desert tortoise biologists will flag the boundaries of areas where activities would need to be restricted to protect tortoises and their habitat. Restricted areas will be monitored to ensure their protection during construction.

13. Speed limits within the project area will be restricted to less than 25 miles per hour (mph) during construction and operation.

14. Lighting will be focused in toward the solar facility and downward to avoid lighting habitats beyond the project perimeter.

15. Monitoring for the presence of ravens and other potential human subsidized predators of desert tortoises will be conducted and a control plan will be implemented if predator densities substantially increase in the vicinity of the facility. BMPs to discourage the presence of ravens onsite include trash management, elimination of available water sources, designing structures to discourage potential nest sites, use of hazing to discourage raven presence, and active monitoring of the site for presence of ravens.

16. A Weed Management Plan, which will be approved by the Service, BIA, BLM and the Tribe, will be implemented prior to the initiation of ground-disturbing activities. Measures in the Weed Management Plan include: worker awareness training; limiting ground disturbance to designated areas only; maintenance of vehicle wash and inspection stations and close monitoring of materials brought onto the site to minimize the potential for weed introduction; reestablishment of native vegetation in disturbed areas to prevent weeds from colonizing newly disturbed areas; and, regularly scheduled monitoring to quickly detect new infestations of weeds, coupled with rapid implementation of control measures to prevent further infiltration.

17. BLM and Applicant shall coordinate to salvage and relocate cacti, yuccas, and shrubs for onsite and offsite restoration efforts on BLM-administered lands for the project (refer to Term and Condition 5.c.).

18. All work area boundaries within the project area will be conspicuously staked, flagged, or otherwise marked to minimize surface disturbance activities. All workers, equipment, vehicles, and construction materials shall remain within the ROW, existing roads, and designated areas. Staging areas will be located in previously-disturbed areas whenever possible.

19. The applicant will develop a habitat restoration plan to be implemented for all temporary disturbances associated with construction of the project to be approved by BIA, BLM, Tribe, and Service.

20. Final transmission tower and associated spur road locations will be adjusted to avoid potentially active tortoise burrows to the greatest extent feasible.

21. Crushing of perennial vegetation in work areas within the ROWs for access road and transmission lines will be avoided to the maximum extent practicable.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATION

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR §402.02).

The jeopardy analysis in this biological opinion relies on four components:

1. The status of the species, which describes the rangewide condition of the desert tortoise, the factors responsible for that condition, and its survival and recovery needs;
2. The environmental baseline, which analyzes the condition of the desert tortoise in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the desert tortoise;
3. The effects of the action, which determine the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the desert tortoise and designated critical habitat; and
4. The cumulative effects, which evaluates the effects of future, non-Federal activities in the action area on the desert tortoise.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the rangewide status of the desert tortoise, taking into account any cumulative effects in the action area, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the desert tortoise in the wild. For the purposes of making the jeopardy determination, the analysis in this biological opinion places an emphasis on consideration of the rangewide survival and recovery needs of the desert tortoise and the role of the action area in the survival and recovery of the desert tortoise as the context for evaluating the significance of the effects of the proposed Federal action, together with cumulative effects.

Section 7(a)(2) of the Act also requires that Federal agencies ensure that any action they authorize, fund, or carry out does not result in the destruction or adverse modification of designated critical habitat. No designated critical habitat will be affected by the proposed action; therefore, no further analysis of critical habitat will be performed in this biological opinion.

C. STATUS OF THE SPECIES- RANGEWIDE

1. MOAPA DACE

The Moapa dace was federally listed as endangered under the Endangered Species Preservation Act of 1966 on March 11, 1967 (32 Federal Register 4001), and has been protected under the Act since its inception in 1973. Critical habitat has not been designated for the Moapa dace. The Service assigned the Moapa dace the highest recovery priority because: it is the only species within the genus *Moapa*; the high degree of threat to its continued existence; and the high potential for its recovery (Service 1996). A final recovery plan was approved by the Service in 1996 (Service 1996).

The Moapa dace was first collected in 1938 and was described by Hubbs and Miller (1948). Key identification characteristics are a black spot at the base of the tail and small, embedded scales, which create a smooth leathery appearance. Coloration is olive-yellow above with indistinct blotches on the sides, with a white belly. A diffuse, golden-brown stripe also is present. Maximum size is approximately 4.7 inches fork length. The oldest known specimen on record is over 4 years old (Scoppettone et al. 1992).

The Moapa dace is a member of the North American minnow family, *Cyprinidae*. The genus *Moapa* is regarded as being most closely related to the dace genera *Rhinichthys* (speckled dace) and *Agosia* (longfin dace) (Coburn and Cavender 1992). These three dace genera, along with the genera *Gila* (chub), *Lepidomeda* (spinedace), *Meda* (spikedace), and *Plagopterus* (woundfin), developed from a single ancestral type (monophyletic) and are only associated with the Colorado River Basin (Service 1996).

The Moapa dace typically occur in waters ranging from 78.8 to 89.6° F (Hubbs and Miller 1948); however, one individual was collected in water temperatures of 67.1°F (Ono et al. 1983). Although Rinne and Minckley (1991) rarely found the species below 86° F, Deacon and Bradley (1972) indicated that the species reaches its greatest abundance at warmer temperatures between 82.4 and 86.0° F.

Reproduction occurs year-round and is confined to the upper, spring-fed tributaries where the water temperatures vary from 84.2 to 89.9° F and dissolved oxygen concentrations vary between 4.1 and 6.2 parts per million (Scoppettone et al. 1992). Juveniles occur almost exclusively in the spring-fed tributaries, whereas adults occur in the mainstem of the Muddy River (Scoppettone et al. 1992). Adults show the greatest tolerance to cooler water temperatures, which appears to be 78.8° F (Scoppettone 1993). Given the species temperature tolerances and cooling pattern of the river (in a downstream direction), its range appears to be restricted to the warmer waters of the upper springs and tributaries of the Warm Springs area (Deacon and Bradley 1972, Cross 1976, Scoppettone et al. 1992).

In 1983, the Service prepared a recovery plan for Moapa dace which was updated in 1996, and identified various tasks to guide recovery (Service 1996). The plan also addresses the current

status, threats, and recovery needs of seven other endemic aquatic species. These include three fishes: the Virgin River chub (*Gila seminuda*) [this species is currently listed as endangered in the Virgin River and is under review for listing in the Muddy River], Moapa speckled dace (*Rhinichthys osculus moapae*), Moapa White River springfish (*Crenichthys baileyi moapae*); Moapa pebblesnail (*Fluminicola avernalis*), grated tyronia (*Tryonia clathrata*), Moapa Warm Springs riffle beetle (*Stenelmis moapa*); and the Amargosa naucorid (*Pelocoris shoshone shoshone*) that co-exist with the Moapa dace in the Muddy River ecosystem.

Threats to Moapa dace habitat include non-native fishes (e.g. tilapia and mollies) and parasites; habitat loss from water diversions and impoundments; increased threat of fire due to encroachment of non-native plant species such as palm trees; and reductions to surface spring-flows resulting from groundwater development, which reduces spawning, nursery habitats, and the food base for the species. The Moapa dace is more vulnerable to catastrophic events due to its limited distribution in conjunction with these threats. The 2006 PBO provides an overview of the hydrogeological factors affecting the Moapa dace.

a. Warm Springs Natural Area

The Warm Springs Natural Area and the Moapa Valley National Wildlife Refuge (NWR) encompass about 20 springs that form the headwaters of the Muddy River. The springs and their outflows onto the Warm Springs Natural Area are home to the majority of the Moapa dace population.

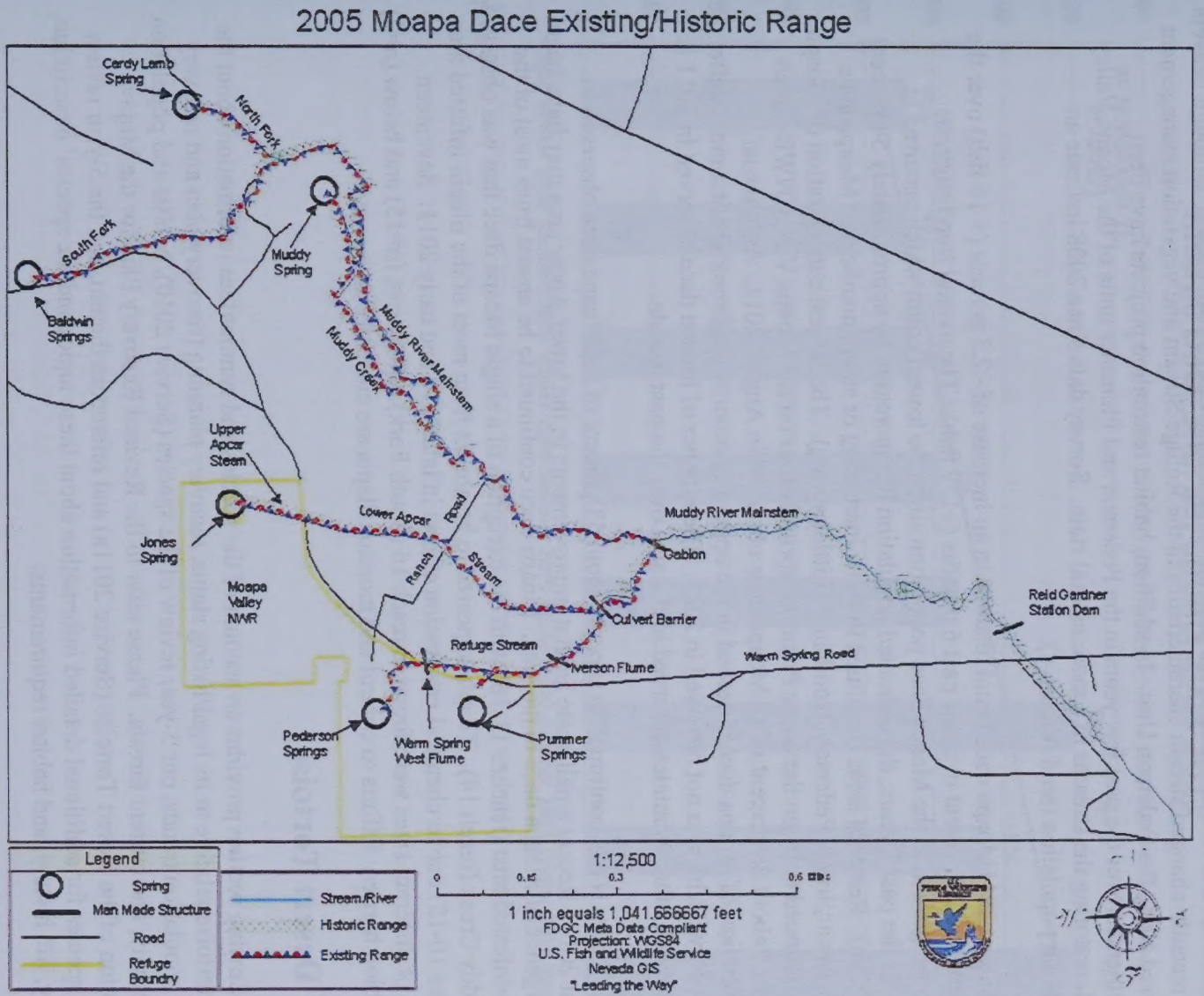
In September 2007, the Southern Nevada Water Authority (SNWA) purchased 1,179 acres of private property that encompasses several springs in the Muddy River headwaters area, including the former Warm Springs Ranch. The property includes 3.8 miles of the mainstream Muddy River. The Warms Springs Natural Area is managed as a nature preserve for protection of Moapa dace; and restoration and management of the areas as an ecological reserve.

b. Current Distribution and Abundance

The Moapa dace is thermophilic and endemic to the headwaters of the Warm Springs area (Figure 3). Moapa dace surveys have been conducted throughout the upper Muddy River system. The 2007 survey data indicate that there were approximately 1,172 fish in the population that occurred throughout 5.6 miles of habitat in the upper Muddy River system. Approximately 97 percent of the total population occurred within one major tributary that included 1.78 miles of spring complexes that emanate from the Pedersen, Plummer, and Apcar spring complexes on the Moapa Valley NWR and their tributaries (upstream of the gabion barrier). Approximately 48 percent of the population was located on the Moapa Valley NWR and 48 percent occupied the Refuge Stream supplied by the Pederson-Plummer springs. The highest densities of Moapa dace occurred on the Plummer and Pedersen units within the Moapa Valley NWR.

In 2008, the number of Moapa dace declined approximately 60 percent, from 1,172 fish in 2007 to 459 in 2008. Most of this decline is due to large changes in the numbers of dace in the Pederson, Plummer, and Refuge stream areas which supported more than 92 percent of the

Figure 3


2005 Moapa Dace Existing/Historic Range
Cardy Lamb Spring
North Fork
South Fork
Baldwin Springs
Muddy Spring
Muddy Creek
Muddy River Mainstem
Upper Apcar Steam
Lower Apcar
Road
Jones Spring
Ranch
Stream
Moapa Valley NWR
Gabion
Culvert Barrier
Reid Gardner Station Dam
Refuge Stream
Iverson Flume
Warm Spring Road
Pederson Springs
Warm Spring West Flume
Pummer Springs
Legend
Spring
Man Made Structure
Road
Refuge Boundry
Stream/River
Historic Range
Existing Range
1:12,500
1 inch equals 1,041.666667 feet
FDGC Meta Data Compliant
Projection: WGS84
U.S. Fish and Wildlife Service
Nevada GIS
"Leading the Way"

population in 2007. The cause of the population decline is currently unknown, although beavers have recently changed stream characteristics in the Refuge Stream and vegetation management occurred along the Pederson Unit. In addition, habitat restoration projects have been implemented over the past few years in the Pederson and Plummer units of the Moapa Valley NWR, restoring the streams to a more natural state. Survey data since 2008 indicate an increasing population trend (Figure 4).

The August 2011Moapa dace count resulted in an increase of ~2.3 percent (+ 16 fish) over the past year and 24 percent over the past 6 months (+139 fish). The overall trend suggests continued growth in the Moapa dace population since the lowest count which occurred in 2008. In the past 3 years, the estimated population has increased by approximately 54 percent (+251 fish). Restored areas continued to show increasing or stable numbers of Moapa dace (upper Apcar, lower Pederson, Goodchild [Little] spring). The largest concentration of Moapa dace continued to be on the upper Plummer springbrooks on the Moapa Valley NWR which supported about 29 percent of all Moapa dace observed in August 2011. An unusual concentration of Moapa dace observed in the upper Plummer springbrook about a month after the July 2010 wildfire was not observed in 2011. The number of Moapa dace observed in 2011 is similar to all other estimates observed in the area over the past decade.

Moapa Valley NWR continued to support about 53 percent of the Moapa dace observed in August 2011. Recent small-scale habitat improvements in the lower Apcar area may have begun a resurgence of Moapa dace in the area. Moapa dace continued to be absent from most of the tilapia-infested area (reaches 11-16) with the exception of a single Moapa dace that was observed in Muddy Creek (reach 14). Tilapia appeared to be absent from most of the tilapia-infested area (reaches 10-15) due to chemical eradication efforts in late 2010 and early 2011. Seventeen tilapia of different sizes were found in reach 16 (South Fork) both above (n=15) and below (n=2) the gabion barrier. Efforts to control and monitor tilapia are currently underway.

2. Desert Tortoise

The following section provides an account of the species and summarizes information about the desert tortoise relative to its legal/listing status, recovery planning (recovery plan and recovery units), population trends, our 5-year review of the species (Service 2010), habitat and population connectivity, and current threats. Please refer to the Revised Recovery Plan for the Mojave Population of the Desert Tortoise (Service 2011a) and references therein, and the 5-year review for the species for additional detailed information about these topics and the species' description, ecology, life history, and habitat requirements.

a. Legal/Listing History

On August 20, 1980, the Service published a final rule listing the Beaver Dam Slope population of the desert tortoise in Utah as threatened and designated 16,640 acres of BLM-administered land as critical habitat (45 Federal Register 55654). Major threats to the species identified in the rule included habitat destruction through development, overgrazing, and geothermal development, collection for pets, malicious killing, road kills, and competition with grazing or

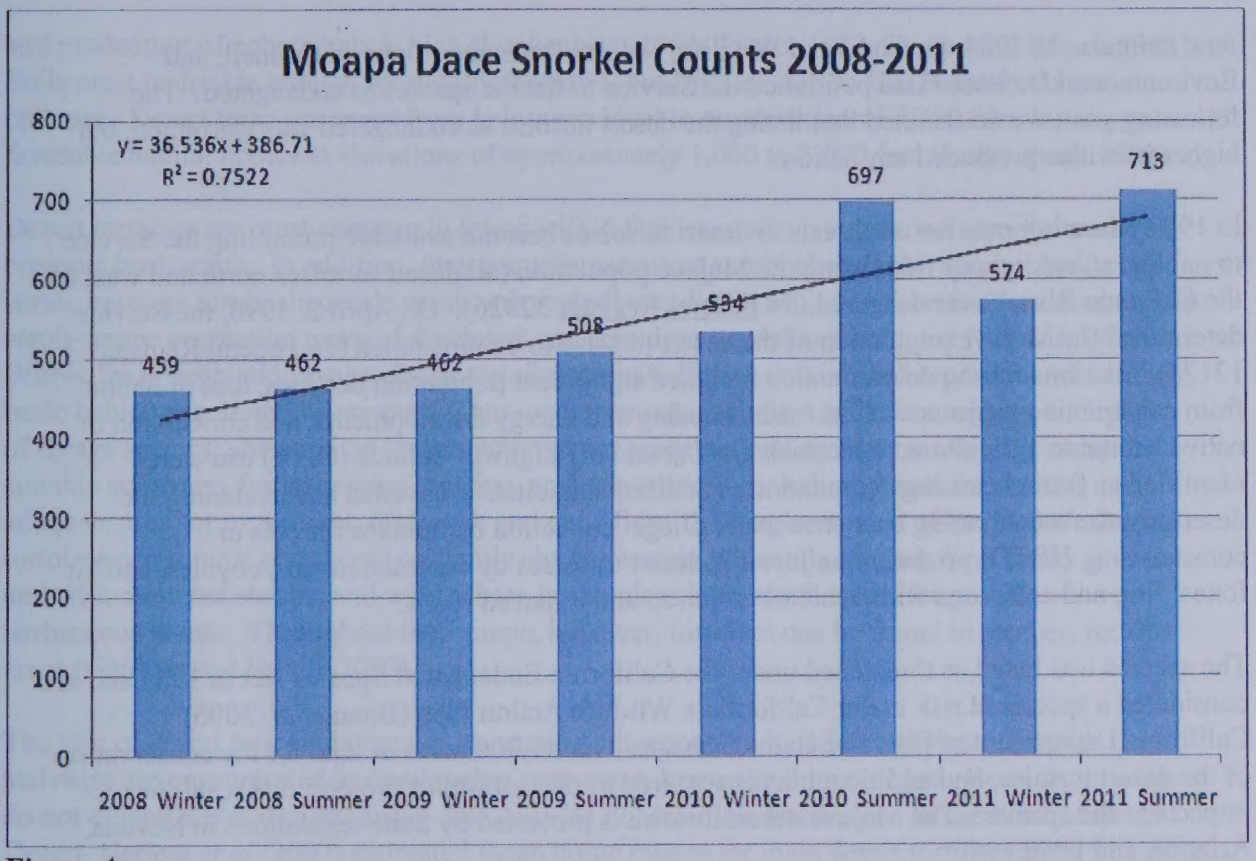

Moapa Dace Snorkel Counts 2008-2011
y = 36.536x + 386.71
R² = 0.7522
800
700
600
500
400
300
200
100
0
459
462
462
508
534
697
574
713
2008 Winter
2008 Summer
2009 Winter
2009 Summer
2010 Winter
2010 Summer
2011 Winter
2011 Summer

Figure 4

feral animals. In 1984, Defenders of Wildlife, Natural Resources Defense Council, and Environmental Defense Fund petitioned the Service to list the species as endangered. The following year, we determined that listing the desert tortoise as endangered was warranted, but higher priorities precluded any action.

In 1989, more information on threats to desert tortoises became available prompting the Service to publish an emergency rule listing the Mojave population (all desert tortoises north and west of the Colorado River) as endangered (54 Federal Register 32326). On April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened (55 Federal Register 12178). Reasons for the determination included significant population declines, loss of habitat from construction projects such as roads, housing and energy developments, and conversion of native habitat to agriculture. Livestock grazing and off-highway vehicle (OHV) use were identified as factors causing degradation of additional habitat. Also cited as threatening the desert tortoise's continuing existence were: illegal collection by humans for pets or consumption; URTD; predation on juvenile desert tortoises by common ravens, coyotes, and kit foxes; fire; and collisions with vehicles on paved and unpaved roads.

The species was listed as threatened under the California Endangered Species Act in 1989 and is considered a species at risk under California's Wildlife Action Plan (Bunn *et al.* 2006). California Department of Fish and Game manages over 48,000 acres of land for the conservation of the desert tortoise, and additional lands acquired as mitigation for projects that result in impacts to the species. The Mojave desert tortoise is protected by State regulations in Nevada, Arizona, and Utah.

On February 8, 1994, the Service designated approximately 6.4 million acres of critical habitat for the Mojave population of the desert tortoise in portions of California, Nevada, Arizona, and Utah (59 Federal Register 5820), which became effective on March 10, 1994.

b. Species Account

The desert tortoise is a large, herbivorous reptile that occurs in the Mojave and Sonoran deserts in southern California, southern Nevada, Arizona, and the southwestern tip of Utah in the U.S., as well as Sonora and northern Sinaloa in Mexico. The Mojave desert tortoise occurs north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, and southwestern Utah, and in the Sonoran (Colorado) Desert in California.

Desert tortoises reach 8 to 15 inches in carapace (upper shell) length and 4 to 6 inches in shell height. Hatchlings emerge from eggs at about 2 inches in length. Adults have a domed carapace and relatively flat, unhinged plastrons (lower shell). Their shells are greenish-tan to dark brown in color with tan scute (horny plate on the shell) centers. Adult desert tortoises weigh 8 to 15 pounds. The forelimbs have heavy, claw-like scales and are flattened for digging; hind limbs are more elephantine.

Optimal habitat for the desert tortoise has been characterized as creosote bush scrub in which precipitation ranges from 2 to 8 inches, where a diversity of perennial plants is relatively high,

and production of ephemerals is high (Luckenbach 1982, Turner 1982, Turner and Brown 1982). Soils must be friable enough for digging burrows, but firm enough so that burrows do not collapse. Desert tortoises occur from below sea level to an elevation of 7,300 feet, but the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet (Luckenbach 1982).

Desert tortoises are most commonly found within the desert scrub vegetation type, primarily in creosote bush scrub. In addition, they occur in succulent scrub, cheesebush scrub, blackbrush scrub, hopsage scrub, shadscale scrub, microphyll woodland, Mojave saltbush-allscale scrub and scrub-steppe vegetation types of the desert and semidesert grassland complex (Service 1994). Within these vegetation types, desert tortoises potentially can survive and reproduce where their basic habitat requirements are met. These requirements include a sufficient amount and quality of forage species; shelter sites for protection from predators and environmental extremes; suitable substrates for burrowing, nesting, and overwintering; various plants for shelter; and adequate area for movement, dispersal, and gene flow. Throughout most of the Mojave Region, tortoises occur most commonly on gently sloping terrain with soils ranging from sandy-gravel and with scattered shrubs, and where there is abundant inter-shrub space for growth of herbaceous plants. Throughout their range, however, tortoises can be found in steeper, rockier areas (Gardner and Brodie 2000).

The size of desert tortoise home ranges varies with respect to location and year. Tortoise activities are concentrated in overlapping core areas, known as home ranges. Because tortoises do not defend a specific, exclusive area, they do not maintain territories. In the West Mojave Desert, Harless *et al* (2007) estimated mean home ranges for male desert tortoises to be 111 acres and 40 acres for females. Over its lifetime, each desert tortoise may require more than 1.5 square miles of habitat and make forays of more than 7 miles at a time (Berry 1986). In drought years, the ability of tortoises to drink while surface water is available following rains may be crucial for tortoise survival. During droughts, tortoises forage over larger areas, increasing the likelihood of encounters with sources of injury or mortality including humans and other predators.

Desert tortoises are most active during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rainstorms. Desert tortoises spend most of the remainder of the year in burrows, escaping the extreme conditions of the desert. However, under certain conditions desert tortoises may be aboveground any month of the year. Generally, tortoises are most active from approximately March 1 through October 31.

Tortoise activity patterns are primarily controlled by ambient temperature and precipitation (Nagy and Medica 1986, Zimmerman *et al.* 1994). Desert tortoises are active for approximately 6 weeks to 5 months of the year, depending on annual variations of temperature and rainfall. Deserts are characterized by prolonged periods of barely measurable rainfall. In much of the Mojave Desert, droughts of 8 months or more occur regularly. During such times, the desert is virtually devoid of food for tortoises except for cacti and dried grasses (Oftedal 2002). In the East Mojave and Colorado Deserts, annual precipitation occurs in both summer and winter, providing food and water to tortoises throughout much of the summer and fall. Most precipitation occurs in winter in the West Mojave Desert resulting in an abundance of annual

spring vegetation, which dries up by late May or June. Tortoises in the West Mojave are primarily active in May and June, with a secondary activity period from September through October.

Tortoises also are active during periods of mild or rainy weather in summer and winter. During inactive periods, tortoises rest in subterranean burrows or caliche caves, and spend approximately 98 percent of the time in these shelter sites (Nagy and Medica 1986). During active periods, they usually spend nights and the hotter part of the day in their burrow; they also rest under shrubs or in shallow burrows (pallets). Tortoises may use an average of 7 to 12 burrows at any given time (Bulova 1994, TRW Environmental Safety Systems Inc.1997).

Walde *et al* (2003) observed that desert tortoises retreated into burrows when air temperature reached 91.0° F ± 3.55° F and ground temperatures reached 94.6° F ± 6.05° F; 95 percent of desert tortoise observations of desert tortoises above ground occurred at air temperature less than 91° F. The body temperature at which desert tortoises become incapacitated ranges from

Although desert tortoises eat alien plants, they generally prefer native forbs when available (Jennings 1993, Avery 1998). Consumption of alien plants may place them at a nitrogen and water deficit (Henen 1997). Frequent droughts place tortoises at even greater water and nitrogen deficit than during moderate or high rainfall years (Peterson 1996, Henen 1997). During a drought, more nitrogen than normal is required to excrete nitrogenous wastes, thus more rapidly depleting nitrogen stored in body tissues. Plants also play important roles in stabilizing soil and providing cover for protection from predators and heat.

Further information on the range, biology, and ecology of the desert tortoise can be found in Berry and Burge (1984), Brooks (2003), Burge (1978), Burge and Bradley (1976), Bury *et al.* (1994), Gardner and Brodie 2000; Germano *et al.* (1994), Hovik and Hardenbrook (1989), Jennings (1997), Karl (1981, 1983a, 1983b), Luckenbach (1982), Nussear et al. (2009), Oftedal 2002; Service (2010, 2011), Tracy *et al.* 2004; Van Devender (2002); and Weinstein *et al.* (1987).

c. Recovery Plan for the Desert Tortoise

The first recovery plan for the desert tortoise was published in1994, together with a companion document identifying 14 proposed desert wildlife management areas (DWMAs; Service 1994) within six recovery units. The recovery plan serves as the basis and key strategy for recovery and delisting of the species. Within each DWMA, the recovery plan recommends implementation of reserve-level protection of desert tortoise populations and habitat, while maintaining and protecting other sensitive species and ecosystem functions. The recovery plan also recommends that DWMAs be designed to follow the accepted concepts of reserve design and be managed to restrict human activities that negatively affect desert tortoises (Service 1994).

The Service released the final revised recovery plan in 2011 (Service 2011a). The revised recovery plan refines the recovery and delisting criteria and reduced the number of recovery units from six to five. Since 1994, research pertaining to ecological and genetic variation has provided

important insights into patterns of distribution within the Mojave desert tortoise population. This information was used to define the recovery unit boundaries in a manner that balances distinctiveness and variability within the population. Maintaining local adaptation as well as genetic diversity over time is important for recovery; thus, applying these concepts at the appropriate recovery unit level will facilitate prioritization of recovery and management activities within the various geographic units.

The goals of the recovery plan are recovery and delisting of the desert tortoise. The recovery objectives and criteria below represent our best assessment of the conditions that would most likely result in a determination that delisting of the desert tortoise is warranted.

Recovery Objective 1 (Demography). Maintain self-sustaining populations of desert tortoises within each recovery unit into the future.

> Recovery Criterion 1. Rates of population change for desert tortoises are increasing over at least 25 years (a single tortoise generation), as measured by a) extensive, rangewide monitoring across tortoise conservation areas within each recovery unit, and b) direct monitoring and estimation of vital rates (recruitment, survival) from demographic study areas within each recovery unit.

Recovery Objective 2 (Distribution). Maintain well-distributed populations of desert tortoises throughout each recovery unit.

> Recovery Criterion 2. Distribution of desert tortoises throughout each tortoise conservation area is increasing over at least 25 years.

Recovery Objective 3 (Habitat). Ensure that habitat within each recovery unit is protected and managed to support long-term viability of desert tortoise populations.

> Recovery Criterion 3. The quantity of desert tortoise habitat within each desert tortoise conservation area is maintained with no net loss until tortoise population viability is ensured. When parameters relating habitat quality to tortoise populations are defined and a mechanism to track these parameters established, the condition of desert tortoise habitat should also be demonstrably improving.

d. Recovery Units

The recovery units in the revised recovery plan were mapped with the aid of modern GIS tools, much more precisely than in 1994; however, transitions between recovery units are not always as precise on the ground as depicted by lines on a map. The Service reduced the number of recovery units from six to five and changed some boundaries of the 1994 recovery units, as described and justified below.

(1) Upper Virgin River Recovery Unit. This recovery unit is equivalent to the original Upper Virgin River Recovery Unit in the 1994 Recovery Plan and encompasses all desert tortoise

habitat in Washington County, Utah, east of the Beaver Dam Mountains. Unique habitat characteristics and tortoise behavior in this region justify separating the most northern extreme of the tortoise's range, east of the Beaver Dam Mountains, into a separate recovery unit. Here the animals live in a complex topography consisting of canyons, mesas, sand dunes, and sandstone outcrops where the vegetation is a transitional mixture of sagebrush (*Artemisia* spp.) scrub, creosote bush scrub, blackbrush scrub, and a psammophytic (sandy-soil) community. Desert tortoises often use sandstone and lava caves instead of burrows, travel to sand dunes for egg laying, and use still other habitats for foraging.

Recent DNA microsatellite evidence (Hagerty and Tracy 2010) suggests that there is little genetic differentiation between the Upper Virgin River and the neighboring recovery unit, which supports findings from allozyme (protein) and mitochondrial DNA (mtDNA) markers (Lamb *et al.* 1989; Britten *et al.* 1997). Although assignment tests correctly placed 95 percent of individuals in the Upper Virgin River Recovery Unit (Murphy *et al.* 2007), samples from nearby populations west of the Beaver Dam Mountains were not included in the study.

(2) Northeastern Mojave Recovery Unit. This recovery unit is similar to the 1994 designation, extending into extreme southwestern Utah and northwestern Arizona, but excluding portions south of Las Vegas. The east end of the unit extends south from the Beaver Dam Mountains, across the north end of the Virgin Mountains, down to the Colorado River. From the Colorado River at Las Vegas Bay, the southern boundary extends west generally along Las Vegas Wash through the city of Las Vegas to the Spring Mountains. From here, the western boundary extends north up the Sheep Mountains.

Recent DNA microsatellite data indicate that this unit is genetically similar to the Upper Virgin River Recovery Unit, but the Northeastern Mojave Recovery Unit does contain distinct microsatellite differences compared to the remainder of the range (Hagerty and Tracy 2010). The Sheep Mountains down to the Spring Mountains act as a near barrier for the western portion of this unit. Some variation may occur to the south and west from the Mormon Mesa, but genetic breaks appear to be ambiguous relative to at least semi-permeable topographic barriers to gene flow, such as the Muddy Mountains. An allozyme cluster at one locus from populations in the Mormon Mesa critical habitat unit overlaps another cluster identified from populations in Piute Valley in the Eastern Mojave Recovery Unit (Britten *et al.* 1997). A distinct shell phenotype also occurs in the Beaver Dam Slope region (Service 1994; Britten *et al.* 1997), but these tortoises are not genetically isolated from adjacent populations within the recovery unit (Bury *et al.* 1994).

Desert tortoises in this recovery unit are generally found in creosote bush scrub communities of flats, valley bottoms, alluvial fans, and bajadas, but they occasionally use other habitats such as rocky slopes and blackbrush scrub. Desert tortoises are often active in late summer and early fall, in addition to spring, reflecting the fact that this region receives up to about 40 percent of its annual rainfall in summer and supports two distinct annual floras on which tortoises can feed. Average daily winter temperatures usually fluctuate above freezing, and summer temperatures are typically a few degrees cooler than in the western Mojave and Colorado deserts. Two or more desert tortoises often den together in caliche caves in bajadas and washes or caves in

sandstone rock outcrops, and they typically eat summer and winter annuals, cacti, and perennial grasses.

This recovery unit includes the Beaver Dam Slope, Gold Butte-Pakoon, and Mormon Mesa critical habitat units. It also includes Lake Mead National Recreation Area south to Las Vegas Bay, Grand Canyon-Parashant National Monument on the Arizona Strip, and the eastern edge of Desert National Wildlife Range.

(3) Eastern Mojave Recovery Unit. This recovery unit is similar to the 1994 designation, spanning the Nevada-California border, including Oasis Valley, Amargosa Desert, Pahrump Valley, and extending south into Shadow Valley, but now including habitat north of the Spring Mountains east to the Sheep Mountains as well as Las Vegas and Eldorado valleys north to the city of Las Vegas. The Eastern Mojave Recovery Unit borders the Northeastern Mojave Recovery Unit to the east, extending down the Sheep Mountains to the Spring Mountains, east to Las Vegas Bay on Lake Mead, then down the Colorado River. From the Colorado River at approximately Cottonwood Cove, the southern boundary extends west through Searchlight, down the New York and Providence mountains to the Granite Mountains. From there the western boundary extends north through the Bristol Mountains, Soda Lake, and Silurian and Death valleys. The Spring Mountains, which provided much of the separation between the former Northeastern Mojave and Eastern Mojave recovery units, narrowly channel gene flow through habitat corridors to the north and south, connecting this recovery unit to the Northeastern Mojave Recovery Unit (Hagerty 2008; Hagerty *et al.* 2010).

A majority of this unit had not been previously sampled; however, recent microsatellite data reflect unique nuclear allele frequencies, indicating that this area is relatively isolated from other recovery units (Hagerty and Tracy 2010). Allele frequencies from tortoises at Amargosa Desert and Pahrump Valley sites also form a homogeneous cluster different from other Nevada sites (Britten *et al.* 1997). The Sheep Mountains appear to form a barrier to tortoise movement between the eastern side of the recovery unit and the Northeastern Mojave Recovery Unit. The New York and Providence mountains isolate Ivanpah/Shadow valleys from Eldorado/Fenner valleys in the Colorado Desert Recovery Unit to the east. Saline Valley and Death Valley extending south into Silurian Valley and Soda Dry Lake act as a barrier between this recovery unit and the Western Mojave Recovery Unit. Although gene flow likely occurred intermittently during favorable conditions across this western edge of the recovery unit, this area contains a portion of the Baker Sink, a low-elevation, extremely hot and arid strip that extends from Death Valley to Bristol Dry Lake. This area is generally inhospitable for desert tortoises.

Desert tortoises in this recovery unit are generally found in creosote bush scrub communities of flats, valley bottoms, alluvial fans, and bajadas, but they occasionally use other habitats such as rocky slopes and blackbrush scrub. As in the northeastern Mojave Desert, desert tortoises are often active in this recovery unit in late summer and early fall, in addition to spring, reflecting the fact that this region receives up to about 40 percent of its annual rainfall in summer and supports two distinct annual floras on which tortoises can feed. They typically eat summer and winter annuals, cacti, perennial grasses, and herbaceous perennials. Average daily winter temperatures usually fluctuate above freezing, except in the higher elevations. Summer temperatures are

typically a few degrees cooler, except in the lowest elevations of Death Valley, than the recovery units to the south and west.

The recovery unit includes the east side of Death Valley National Park, much of Mojave National Preserve, and Lake Mead National Recreation Area between Las Vegas Bay and Cottonwood Cove, as well as the Nevada National Security Site (formerly the Nevada Test Site) and the western end of Desert National Wildlife Range. It also includes the Ivanpah Valley critical habitat unit and the Eldorado Valley portion of the Piute-Eldorado critical habitat unit. A lack of desert tortoise habitat dedicated to conservation to the west of the Spring Mountains and in Las Vegas Valley highlights the need for careful management in these areas to maintain connectivity among populations and the genetic variation within this recovery unit. Corridors north and south of the Spring Mountains warrant particular management attention to prevent genetic isolation of populations on either side of this mountain range.

(4) Colorado Desert Recovery Unit. This recovery unit combines the 1994 Eastern Colorado and Northern Colorado recovery units, as well as a portion of the Eastern Mojave Recovery Unit in Piute and Fenner valleys. It is primarily found in California, though it extends into Piute Valley, Nevada, in the northern corner. Patchy habitat southeast of the Cadiz Valley appears to provide some linkage and gene flow, at least historically, between the former Northern and Eastern Colorado recovery units (Nussear *et al.* 2009; Hagerty *et al.* 2010). This linkage, combined with minimal genetic differentiation and a gradient of environmental variation between units (see below), eliminates the biological justification for maintaining these as separate recovery units. Piute and Fenner valleys span the northern border of the northern Colorado Desert and southern edge of the eastern Mojave Desert. The recovery unit shares its north and west boundaries with the Eastern Mojave Recovery Unit: west from Cottonwood Cove Road, through Searchlight, down the New York and Providence mountains, to the Granite Mountains. From the Granite Mountains, the boundary extends through the Old Dad and Bristol mountains, southeast through Bristol Lake and Cadiz Valley, to the southern end of the Calumet Mountains. From there, the boundary drops down to and extends west along California State Highway 62 all the way to the San Bernardino Mountains, including the Morongo Basin. The southern boundary circumscribes the tortoise's range east to the Colorado River.

The prominent Providence and New York mountain ranges, which transect Mojave National Preserve, largely isolate this recovery unit from the Eastern Mojave Recovery Unit to the west. Searchlight Pass is the northern boundary, which separates Eldorado and Piute valleys. The central portion of this recovery unit is separated from the Western Mojave Recovery Unit by the Baker Sink, a low-elevation, extremely hot and arid strip that extends from Death Valley to Bristol Dry Lake and Cadiz Valley. To the south, the transition between the Colorado and Mojave deserts is more subtle. However, urban development along California State Highway 62 now largely separates the two recovery units; use of this highway as the recovery unit boundary is justified based on the broad transition between the two deserts (Turner 1982) and the lack of a natural break in desert tortoise habitat. While the Baker Sink almost divides this recovery unit in half, as generally reflected in the 1994 Northern and Eastern Colorado recovery units, the Colorado Desert is a distinct biome that encompasses a continuum of climatic and floristic characteristics (Turner 1982). Furthermore, substantial historic gene flow is now recognized

within the entire Colorado Desert biome (Murphy *et al.* 2007; Hagerty *et al.* 2010; Hagerty and Tracy 2010). Tortoises from the northern and eastern Colorado deserts lumped within the same basal genetic clusters in two different analytic models (Hagerty 2008). What little genetic differentiation that has been observed between the former Northern and Eastern Colorado recovery units is likely due to an absence of sampling from (at least historical) populations in the central part of the combined unit, south of Highway 62 and east of Highway 177.

Desert tortoises in this recovery unit share mtDNA haplotypes with the Western Mojave Recovery Unit (Lamb *et al.* 1989; Murphy *et al.* 2007) and possess the California shell type (Service 1994). *Haplotypes* are sets of closely linked genetic information on a single chromosome that tend to be inherited together; a chromosome is a long strand of DNA on which genes are found. These desert tortoises are differentiated from desert tortoises in the Northeastern Mojave and Western Mojave recovery units at several allozyme loci (Rainboth *et al.* 1989; Britten *et al.* 1997). Microsatellite data also support the boundary between the Colorado Desert and Northeastern Mojave and Eastern Mojave recovery units (Murphy *et al.* 2007), but less so with the Western Mojave Recovery Unit (Hagerty 2008). *Microsatellites* are repeating base pairs of DNA. Inclusion of the Fenner and Piute valleys in this recovery unit is justified by the contiguous habitat, the failure to reliably assign sampled tortoises to the correct site between Fenner and Chemehuevi valleys (Murphy *et al.* 2007), and the inclusion of individuals from these valleys as part of the Colorado Desert subunit in more extensive genetic analyses (Hagerty and Tracy 2010).

In the Colorado Desert Recovery Unit, desert tortoises are found in the valleys, on bajadas, desert pavements, rocky slopes, and in the broad, well-developed washes (especially to the south). Vegetation is characterized by relatively species-rich succulent scrub, creosote bush scrub, and blue paloverde (*Parkinsonia florida*)-ironwood (*Olneya tesota*)-smoke tree (*Psorothamnus spinosus*) communities. Tortoises feed on both summer and winter annuals, because this region receives about 1/3 of its annual rainfall in summer and supports two distinct annual floras on which they can feed. The climate is somewhat warmer than in other recovery units, with very few freezing days per year. Tortoises within this recovery unit near Goffs produce relatively smaller eggs, produce more eggs overall, lay their second clutches earlier, and are smaller overall than tortoises in the Desert Tortoise Research Natural Area in the Western Mojave Recovery Unit (Wallis *et al.* 1999). Tortoises in this area also produce more eggs than similarly sized females at the Nevada National Security Site in the Eastern Mojave Recovery Unit (Mueller *et al.* 1998).

The recovery unit includes the Piute-Eldorado critical habitat unit (south of Eldorado Valley) and the Chemehuevi, Pinto Mountains, and Chuckwalla critical habitat units. This recovery unit encompasses the eastern end of Mojave National Preserve, the southernmost limits of Lake Mead National Recreation Area, Joshua Tree National Park, and the Chocolate Mountains Gunnery Range. Unprotected habitat southeast of the Cadiz Valley may provide important connectivity necessary to maintain overall genetic variability among populations in this recovery unit.

(5) Western Mojave Recovery Unit. This recovery unit is generally equivalent to the 1994 designation found entirely in California. It includes the central, southwestern, south-central, and

part of the northern Mojave regions. The eastern boundary, which it shares with the Eastern Mojave Recovery Unit, extends down Death and Saline valleys, through Soda Lake and the Bristol Mountains, to the Granite Mountains. The eastern boundary continues down the low-lying Baker sink and Cadiz Valley, separating it from the Colorado Desert Recovery Unit. The boundary extends west along California State Highway 62 to the San Bernardino Mountains.

Habitat in California was well connected prior to human development, allowing gene flow to occur over long geographic distances and multiple vegetation types (Murphy *et al.* 2007) and which is evidenced by results from a landscape-genetic analysis which illustrated diffuse gene flow throughout the recovery unit (Hagerty *et al.* 2010). The north half of this recovery unit borders the Eastern Mojave Recovery Unit along the Baker Sink, a low-elevation, extremely hot and arid strip that extends from Death Valley to Bristol Dry Lake and Cadiz Valley. To the south, the transition between the Colorado and Mojave deserts is more subtle. However, urban development along California State Highway 62 now largely separates the Western Mojave and Colorado Desert recovery units.

Microsatellite evidence concerning the degree of differentiation between the Western Mojave and Colorado Desert recovery units is conflicting, although genetic differentiation is generally low (Murphy *et al.* 2007; Hagerty and Tracy 2010). Morphological characteristics and mtDNA from populations in the Western Mojave also overlap those in the Colorado Desert Recovery Unit (Lamb *et al.* 1989; Service 1994; Murphy *et al.* 2007). Yet, tortoises in the west Mojave from the Kramer Hills region are differentiated from desert tortoises at in the Chemehuevi Valley in the Colorado Desert Recovery Unit at several allozyme loci (Rainboth *et al.* 1989). There is significant genetic differentiation between the Western Mojave Recovery Unit and the adjacent Eastern Mojave Recovery Unit (Murphy *et al.* 2007; Hagerty and Tracy 2010). There also may be some sub-structuring within the Western Mojave Recovery Unit (Murphy *et al.* 2007), which, like the differentiation between this and the Colorado Desert Recovery Unit, may be an artifact of discrete sampling within generally continuous habitat. Substructuring within the Western Mojave Recovery Unit was not found under more continuous sampling (Hagerty and Tracy 2010).

A pronounced difference between the Western Mojave and other recovery units, including the closely allied Colorado Desert Recovery Unit, is in timing of rainfall and the resulting vegetation. In the Western Mojave Recovery Unit, most rainfall occurs in fall and winter and produces winter annuals, which are the primary food source of tortoises. The Western Mojave Recovery Unit contains a unique combination of vegetation types, including the Mojave saltbush (*Atriplex* spp.)-allscale (*A. polycarpa*) scrub complex, blackbrush scrub, cheesebush (*Hymenoclea salsola*) scrub, iodinebush (*Allenrolfea occidentalis*)-alkali scrub complex, desert needlegrass (*Achnatherum speciosum*) scrub steppe, big galleta (*Pleuraphis rigida*) scrub steppe, and the Indian ricegrass (*Achnatherum hymenoides*) scrub-steppe complex, extending slightly into the southwestern Colorado Desert. Aboveground activity occurs primarily (but not exclusively) in spring, associated with winter annual production. Thus, tortoises are adapted to a regime of winter rains and rare summer storms. Here, desert tortoises occur primarily in valleys, on alluvial fans, bajadas, and rolling hills. The extreme differences in precipitation and food availability relative to the other recovery units correspond to different foraging and activity

patterns as well as to different life history characteristics. Tortoises dig deep burrows (usually located under shrubs on bajadas) for winter hibernation and summer aestivation due to generally warm summers and cold winters. Tortoises in the Desert Tortoise Research Natural Area within this recovery unit produce relatively larger eggs, produce fewer eggs overall, lay their second clutches later, and are larger overall than tortoises near Goffs in the Colorado Desert Recovery Unit (Wallis *et al.* 1999). Tortoises in the western Mojave Desert have the smallest reported minimum size at first reproduction (less than 7 inches) compared to populations in other recovery units (Germano 1994). Behaviorally, western Mojave tortoises are much less active during summer than are tortoises in other recovery units.

The recovery unit includes the Fremont-Kramer, Superior-Cronese, and Ord-Rodman critical habitat units. The recovery unit also includes the western half of Death Valley National Park, Marine Corps Air Ground Combat Center, Fort Irwin National Training Center, China Lake Naval Weapons Center, and Edwards Air Force Base.

e. Population Trends

In 1999, the Desert Tortoise Management Oversight Group endorsed the use of line distance sampling (Buckland et al., 2001) as the method for estimating rangewide desert tortoise density and population trends. From 2001 to 2005, and again from 2007 through 2009, desert tortoise populations in five of the six recovery units have been part of a coordinated, rangewide monitoring program using line distance sampling. The Upper Virgin River Recovery Unit is monitored by Utah Division of Wildlife Resources. The rangewide monitoring effort is directed each year at 13 strata that will be used to describe long-term trends. Training is provided each year so that field crews are familiar with the specifics of distance sampling. Training also ensures consistency among the many crews collecting data.

Four parameter estimates contribute to final reported tortoise densities in each monitoring stratum. The basis for distance sampling is the estimation of the number of tortoises detected at increasing distances from the walked transect. As the surveyors look farther from the transect centerline, they will detect fewer and fewer of the tortoises that are actually there, so describing the way detections decrease with distance allows for estimation of the proportion that were present but not detected within a given distance of the transect centerline. Second, an estimate is made of the proportion aboveground or visible in their burrows and available to be detected on transects. Third, the first two estimates are combined with the number of tortoises encountered per kilometer walked to provide the actual density in each stratum. Finally, the proportion detected on the line must be estimated.

Density estimates were generated separately for each monitoring stratum, and then weighted by stratum area to arrive at average density in the monitored area of each recovery unit monitored by the Service's annual population monitoring program (Table 1). When the annual estimates are imprecise, it should not be expected that there will be a close match from one year to the next. Over a period of many years, however, any underlying trend in the number of tortoises should be obvious through this "background noise." Our 5-year review and annual reports on population

monitoring provide additional information on desert tortoise population trends and distribution. Annual reports may be found on the internet at: http://www.fws.gov/nevada/desert_tortoise/index.html.

Table 1. Estimated density of desert tortoises in monitored areas for five recovery units in 2010.

Recovery Unit[1]	Area Surveyed (km^2/mi^2)	No. Transects	Tortoises detected	Density/ (km^2/mi^2)	SE(Density)	% CV (Density)
Eastern Colorado	3472 / 1341	94	72	5.8 / 15.0	1.09	18.8
Eastern Mojave	6030 / 2328	95	45	3.6 / 9.3	1.10	30.3
Northeastern Mojave	3850 / 1486	425	164	3.2 / 8.3	0.52	15.9
Northern Colorado	3572 / 1379	40	24	4.4 / 11.4	1.56	35.6
Western Mojave	8152 / 3148	234	105	3.2 / 8.3	0.47	14.8

[1]As delineated in the 1994 Recovery Plan.

f. 5-Year Review

The 5-year review for the Mojave desert tortoise discusses the status of the desert tortoise and provides information on its ecology, life history, spatial distribution, abundance, habitats, and the threats that led to its listing (i.e., the five-factor analysis required by section 4(a)(1) of the Act (Service 2010). The 5-year review summarizes the results of the line-distance sampling. As the 5-year review notes, much of the difference in densities between years is due to variability in sampling; determining actual changes in densities will require many years of sampling. Additionally, data gathered by line-distance sampling cannot reliably be compared to information gathered through other methods at this time.

The 5-year review describes a quantitative, spatial habitat model for the Mojave desert tortoise that incorporates environmental variables such as precipitation, geology, vegetation, and slope and is based on occurrence data of desert tortoises from sources spanning more than 80 years, including data from the 2001 to 2005 rangewide monitoring surveys (Nussear et al. 2009). The model predicts the probability that desert tortoises will be present in any given location; calculations of the amount of desert tortoise habitat in the 5-year review and in this biological opinion use a threshold of 0.5 or greater predicted value for potential desert tortoise habitat. The model does not account for anthropogenic effects to habitat.

The distribution of the desert tortoise has not changed substantially since the publication of the original recovery plan in 1994 in terms of the overall extent of its range. Prior to 1994, desert tortoises were extirpated from large areas within their distributional limits by urban development (e.g., the cities of Barstow, Lancaster, Las Vegas, St. George); agricultural areas south of Edwards Air Force Base and east of Barstow; military training (e.g., Fort Irwin); and off-road vehicle use. Since 1994, urban development around Las Vegas has likely been the largest

contributor to habitat loss throughout the range. Desert tortoises have been essentially removed from the southern expansion area at Fort Irwin; a relatively small number of animals remain in this area at this time.

On an annual basis, the Service produces a recovery data call report that provides an up-to-date summary of the factors that were responsible for the listing of the species, describes other known threats and the current population trend of the species. The 2011 report describes the desert tortoise's status as 'declining,' and notes that "(a)nnual rangewide monitoring continues, but the life history of the desert tortoise makes it impossible to detect annual population increases (continued monitoring will provide estimates of moderate- to long-term population trends). Data from the monitoring program do not indicate that numbers of desert tortoises have increased since 2001. The fact that most threats appear to be continuing at generally the same levels suggests that populations are still in decline. Information remains unavailable on whether mitigation of particular threats has been successful."

In conclusion, we have used the 5-year review (Service 2010) and additional information that has become available since the publication of that review to analyze the reproduction, numbers, or distribution of the Mojave desert tortoise. The reproductive capacity of the desert tortoise may be compromised to some degree by the abundance and distribution of invasive weeds across its range. Prior to its listing, the number of desert tortoises likely declined rangewide, although we cannot quantify the extent of the decline; since the time of listing, data suggest that declines have occurred in local areas throughout the range. The distributional limits of the desert tortoise's range have not changed substantially since the issuance of the original recovery plan in 1994; however, desert tortoises have been extirpated from large areas within their range. The species' low reproductive rate, the extended time required for young animals to reach breeding age, and the multitude of threats that continue to confront desert tortoises combine to render its recovery a substantial challenge. The 5-year review concludes by recommending that the status of the desert tortoise as a threatened species be maintained.

g. Habitat and Population Connectivity

Quantifying the degree to which a landscape promotes or hinders movements among patches of habitat for a given species, hereafter referred to as "habitat connectivity" (Fischer and Lindenmayer 2007), has become increasingly important relative to desert tortoise recovery. As we evaluate utility-scale solar development and other land uses within the range of the species, it is essential that habitat linkages between and among populations are conserved. For gene flow to occur across the range, populations of desert tortoises need to be connected by areas of occupied habitat that support sustainable numbers of reproductive individuals. Recent research provides evidence that genetic differentiation within the Mojave population is consistent with isolation by distance in a continuous-distribution model of gene flow. Populations at the farthest extremes of the distribution are therefore the most differentiated and a gradient of genetic differentiation occurs between those populations, across the range of the species (Britten *et al.* 1997, Edwards *et al.* 2004a, Murphy *et al.* 2007, Hagerty and Tracy 2010). Genetic analyses also suggest that levels of gene flow among subpopulations of desert tortoises likely were high, corresponding to high levels of habitat connectivity (Murphy *et al.* 2007, Hagerty 2008). In essence, the Mojave

population historically represents a series of continuous, overlapping home ranges within suitable habitats whose boundaries between divergent units may be validated by ecological or major topographic features, such as steep mountainous terrain or, even more significantly, the Colorado River (Germano *et al.* 1994, Nussear *et al.* 2009).

Individual desert tortoises can make long-distance movements through restricted habitats, which may contribute to gene flow (Berry 1986, Edwards *et al.* 2004b), though we do not know the extent to which individuals utilize narrow corridors of relatively intact habitat. The underpinning of the continuous-distribution model of gene flow described above, and the evidence from desert tortoise population genetic studies and distribution, is that individual desert tortoises breed with their neighbors, those desert tortoises breed with other neighbors, and so on. The movements that maintain the genetic diversity across populations occur over generations and not necessarily during the life span of a single desert tortoise. Therefore, for gene flow to happen reliably, populations need to be connected across the range by occupied areas of habitat linkages that support sustainable numbers of desert tortoises.

To define the area required to maintain resident populations within the linkages, we considered desert tortoise home range size and the magnitude of edge effects. The size of desert tortoise home ranges varies with respect to location and year (Berry 1986) and may serve as an indicator of resource availability and opportunity for reproduction and social interactions (O'Connor *et al.* 1994). Females have long-term home ranges that may be as little as or less than half that of the average male, which can range to 200 acres (Burge 1977, Berry 1986, Duda *et al.* 1999, Harless *et al.* 2009). Core areas used within the lifetime home range of desert tortoises depend on the number of burrows used within those areas (Harless *et al.* 2009). Over its lifetime, a desert tortoise may use more than 1.5 miles^2 of habitat and may make periodic forays of more than 7 miles at a time (Berry 1986). We therefore assess the viability of the linkages based on the ability of those linkages to maintain the lifetime home range of a desert tortoise or the ability of home ranges of this size to connect to one another absent any barriers. Because we expect lifetime home ranges to expand and contract over time, we can consider whether the linkage could remain viable in a year where decreased resource availability results in a smaller population of individuals that respond by expanding their home ranges.

In assessing lifetime home ranges, the Service (1994) assumed a circular configuration of this area when using it in the population viability assessment. We based this assumption on the fidelity that desert tortoises exhibit towards an overwintering burrow year after year. Consequently, the overwintering burrow serves as an anchor point from which the lifetime utilization area radiates out. Using a circular lifetime home range of 1.5 miles^2 for a desert tortoise, we estimate that a linkage would need to be at least 1.4 miles wide to accommodate the width of a single home range. Although these figures provide a means for characterizing the potential minimum width of a linkage, we do not know the exact area or land configuration required to support a sustainable population of resident desert tortoises within any particular linkage, which would be dependent upon several factors.

Based on the best available information, occupancy likely depends on many site-specific factors, including: 1) desert tortoise densities in the vicinity (i.e., lower density sites require larger areas

to reliably support sustainable numbers of desert tortoises); 2) length-to-width ratio of the linkage (i.e., longer linkages may need to be wider to preserve the dynamic home ranges and interactions required for gene flow); and 3) potential edge effects and integrity of the ecosystem within and adjacent to the linkage. Another consideration is the extent to which slope and ruggedness of the terrain allows desert tortoise occupancy or passage. In addition, maintaining connectivity of desert tortoise habitats and populations should reflect results from the landscape genetic analyses of Hagerty (2008) and Hagerty *et al.* (2010). These analyses showed that desert tortoise gene flow generally occurred historically in a diffuse pattern across the landscape unless otherwise constrained to more narrow, concentrated pathways created by topographic barriers (e.g., around the Spring Mountains in western Nevada). As a result, it is evolutionarily imperative that conservation is focused on maintaining a series of redundant linkages between core populations and critical habitats.

The report prepared by the Desert Tortoise Recovery Plan Assessment Committee (Tracy *et al.* 2004) concluded that estimating accurate long-term trends of desert tortoise populations, habitat, and/or threats across the range was not feasible based on the combined suite of existing data and analyses. Instead, these data provide general insight into the rangewide status of the species and show appreciable declines at the local level in many areas (Luke *et al.* 1991, Berry 2003, Tracy *et al.* 2004). Some of the constraints that make estimating population densities extremely difficult include the cryptic nature of the species (i.e., individuals spend much of their lives underground or concealed under shrubs), inactivity in years of low rainfall, and low abundance across a broad distribution within several different habitat types. Other factors, such as the inability to sample on private lands and rugged terrain, further complicate sampling efforts. Consequently, because of these constraints and the various methods used to estimate abundance over the years, we cannot provide concise estimations of the density of desert tortoises in each recovery unit or DWMA that have been made in a consistent manner.

Given the difficulty in determining the density of desert tortoises over large areas, differences in density estimates in the recovery plan and those derived from subsequent sampling efforts may not accurately reflect on-the-ground conditions. Regardless, the absence of live desert tortoises and presence of carcasses over large areas of some DWMAs provide at least some evidence that desert tortoise populations seem to be in a downward trend in some regions.

h. Current Threats

The majority of threats to desert tortoises and their habitats remain similar to those cited in the original listing rules and are generally associated with human land uses. Some of these threats include urbanization, unauthorized OHV activity, authorized vehicular activity, illegal collecting, mortality on paved roads, vandalism, livestock grazing, feral burros, drought, nonnative plants and changes to natural fire regimes, and environmental contaminants. URTD and possibly other diseases were also identified as significant threats and continue to be of concern.

Urbanization and associated development is a major impact to the species and its habitat. In Nevada, most urbanization has occurred in the Las Vegas, Pahrump, Mesquite, and Coyote Springs Valley. Most urban development in Utah occurred in the vicinity of St. George. In

California, urbanization and military use of the desert have resulted in significant effects to the desert tortoise. The most important urban areas for the desert tortoise in California include the Barstow, Victorville, and Twenty-Nine Palms areas. Large military bases and facilities in the Western Mojave Recovery Unit include Ft. Irwin, China Lake, Edwards Air Force Base, and the Marine Corps Air Ground Combat Center.

Recreational use on roads and trails, and large-volume, high-speed travel on major roads and highways has contributed to desert tortoise mortality; and habitat loss, degradation, and fragmentation. Many highways have been fenced to exclude tortoises which includes U.S. Highway 95 south of Las Vegas; U.S. Highway 93 north of Las Vegas; State Routes 161, 163, 164, and 165; Interstate 15 northeast of Las Vegas and in California; and Interstates 10 and 40, and Highways 58, 62, and 395 in California.

Drought has been implicated as a factor in reduced survival rates on desert tortoises in local areas (Longshore *et al.* 2003). In this 9-year study, researchers compared two "closely situated, but physiographically different, sites" in the Lake Mead National Recreation Area. After a period during which survival rates were stable, the survival rate decreased on one of the sites that experienced drought conditions in 3 out of 4 years. The authors postulate that if such local incidents occur on a regular basis, "source-sink population dynamics may be an important factor" in determining the density of desert tortoise populations.

Proliferation of invasive plants is increasing in the Mojave and Sonoran deserts and is recognized as a significant threat to desert tortoise habitat. Many species of nonnative plants from Europe and Asia have become common to abundant in some areas, particularly where disturbance has occurred and is ongoing. As nonnative plant species become established, native perennial and annual plant species may decrease, diminish, or die out (D'Antonio and Vitousek 1992). Land managers and field scientists have identified over 116 species of nonnative plants in the Mojave and Colorado deserts (Brooks and Esque 2002).

Increased levels of atmospheric pollution and nitrogen deposition related to increased human presence and combustion of fossil fuels can cause increased levels of soil nitrogen, which in turn may result in significant changes in plant communities (Aber *et al.* 1989). Many of the nonnative annual plant taxa in the Mojave region evolved in more fertile Mediterranean regions and benefit from increased levels of soil nitrogen, which gives them a competitive edge over native annuals. Studies at three sites within the central, southern, and western Mojave Desert indicated that increased levels of soil nitrogen can increase the dominance of nonnative annual plants and promote the invasion of new species in desert regions. Furthermore, increased dominance by nonnative annuals may decrease the diversity of native annual plants, and increased biomass of nonnative annual grasses may increase fire frequency (Brooks 2003).

Nutritional intake affects growth rates in juvenile desert tortoises (Medica *et al.* 1975) and female reproductive output (Turner *et al.* 1986, 1987; Henen 1992). Invasion of nonnative plants can affect the quality and quantity of plant foods available to desert tortoises, and thereby affect nutritional intake. Desert tortoises are generally quite selective in their choices of foods (Burge 1977; Nagy and Medica 1986; Turner *et al.* 1987; Avery 1992; Henen 1992; Jennings 1992,

1993; Esque 1992, 1994), and in some areas the preferences are clearly for native plants over the weedy nonnatives.

As native plants are displaced by nonnative invasive species in some areas of the Mojave Desert, nonnative plants can be a necessary food source for some desert tortoises. However, nonnative plants may not be as nutritious as native plants. Recent studies have shown that calcium and phosphorus availability are higher in forbs than in grasses and that desert tortoises lose phosphorus when feeding on grasses but gain phosphorus when eating forbs (Hazard *et al.* 2002). Nagy *et al.* (1998), in a comparative study on the nutritional qualities of native vs. nonnative grasses and forbs commonly consumed by desert tortoises (*Achnatherum hymenoides* [Indian ricegrass] vs. *Schismus barbatus*; *Malacothrix* spp. [desert dandelion] vs. *Erodium cicutarium*), found that the nutritional value of the two grasses was similar, but both grasses had much lower nutritional value than the forbs. This suggests that the proliferation of nonnative grasses such as *Schismus* to the exclusion of native forbs and other plants (D'Antonio and Vitousek 1992) places desert tortoises at a nutritional disadvantage. Furthermore, if desert tortoises consume just enough food to satisfy their energy needs (as commonly noted in other vertebrate groups), and then the native forbs provide significantly more nitrogen and water than the nonnative forbs (Nagy *et al.* 1998).

Changes in the abundance and distribution of native plants also may affect desert tortoises in more subtle ways. In the Mojave Desert, many food plants are high in potassium (Minnich 1979), which is difficult for desert tortoises to excrete due to the lack of salt glands that are found in other reptilian herbivores such as chuckwallas (*Sauromalus obesus*) and desert iguanas (*Dipsosaurus dorsalis*) (Minnich 1970, Nagy 1972). Reptiles also are unable to produce osmotically concentrated urine, which further complicates the ability for desert tortoises to expel excess potassium (Oftedal and Allen 1996). Oftedal (2002) suggested that desert tortoises may be vulnerable to URTD or other diseases due to their need to obtain sufficient water and nitrogen from food plants to counteract the negative effects of dietary potassium. Only high quality food plants (as expressed by the Potassium Excretion Potential, or PEP, index) allow substantial storage of protein (nitrogen) that is used for growth and reproduction, or to sustain the animals during drought. Nonnative, annual grasses have lower PEP indices than most native forbs (Oftedal 2002; Oftedal *et al.* 2002). Foraging studies have demonstrated that juvenile Mojave tortoises are highly selective while foraging, selecting both the plant species and plant parts that have the highest PEP value. Impacts to vegetation (such as livestock grazing, invasion of nonnative plants, and soil disturbance) that reduce the abundance and distribution of high PEP plants may result in additional challenges for foraging desert tortoises (Oftedal *et al.* 2002).

In addition, predation by common ravens and coyotes is considered a threat that may be increasing in severity due to the expansion of human activities into more remote locations throughout the desert or prey shifting because of prolonged drought and a lack of prey species (e.g., lagomorphs). Common raven populations in some areas of the adjacent Mojave Desert have increased 1,500 percent from 1968 to 1988 in response to expanding human use of the desert (Boarman 2002). Since ravens were scarce in the desert prior to 1940, the existing level of raven predation on juvenile desert tortoises is considered an unnatural occurrence (BLM 1990).

In addition to ravens, domestic and feral dogs have emerged as significant predators of desert tortoises that occur in areas adjacent to residential development.

Global climate change is likely to affect the species' ability to recover. For example, estimates for the range of the Mojave desert tortoise suggest more frequent and/or prolonged droughts with an increase of the annual mean temperature by 5 to 7 degrees F. The greatest increases will likely occur in summer (June-July-August mean increase of as much as 9 degrees F [Christensen et al. 2007 in Service 2010]). Precipitation likely will decrease by 5 to 15 percent annually in the region, with winter precipitation decreasing up to 20 percent and summer precipitation increasing by 5 percent. Because germination of the desert tortoise's food plants is highly dependent on cool-season rains, the forage base could be reduced due to increasing temperatures and decreasing precipitation in winter. Although drought occurs fairly routinely in the Mojave Desert, extended periods of drought have the potential to affect desert tortoises and their habitats through physiological effects to individuals (i.e., stress) and limited forage availability. To place the consequences of long-term drought in perspective, Longshore et al. (2003) demonstrated that even short-term drought can result in elevated levels of mortality of desert tortoises; therefore, long-term drought is likely to have even further reaching effects, particularly given that the current fragmented nature of desert tortoise habitat (e.g., urban and agricultural development, highways, freeways, military training areas, etc.) will make recolonization of extirpated areas difficult, if not impossible.

Renewable Energy Projects

Renewable energy projects, particularly solar energy projects, have emerged as an important new threat to the desert tortoise. In an effort to properly manage the resources on public land in the southwest at a landscape level while allowing some development of solar energy projects, BLM is preparing a programmatic EIS. On October 27, 2011, the Supplement to the Draft Solar Programmatic EIS became available to the public for a 90-day comment period (BLM and Department of Energy 2010). BLM's preferred alternative includes 17 solar energy zones, totaling about 285,000 acres potentially available for development within the zones. The preferred alternative also establishes a variance process that will allow development of well-sited projects outside of solar energy zones on an additional 20 million acres of public land. To date, 13 commercial-scale solar energy facilities have been approved or constructed (Table 2). Approved projects include those which have completed all actions required by agency regulations. Additional information on the Draft Solar Programmatic EIS can be found on the internet at: *http://solareis.anl.gov/index.cfm*. For a list of all solar projects refer to website: *http://www.seia.org/galleries/pdf/Major%20Solar%20Projects.pdf.*

As discussed above, the project-by-project and cumulative effects of the renewable energy program within the range of the Mojave population of the desert tortoise have the potential to reduce the amount of available, occupied and/or suitable habitat by hundreds of thousands of acres. The effects from utility-scale projects and impacts to habitat and population (i.e., genetic) connectivity have recently come to the forefront as a significant threat to the desert tortoise.

Table 2. Approved solar projects in desert tortoise habitat on public and private land.

Project	Acres of Desert Tortoise Habitat	Recovery Unit
Ivanpah Solar Electric Generating System- CA	3,582	Eastern Mojave
Abengoa Mojave	1,765	Western Mojave
Nevada Solar One- NV	400	Northeastern Mojave
Copper Mountain North, NV	1,400	Northeastern Mojave
Copper Mountain - NV	380	Northeastern Mojave
Silver State North- NV	2,966	Eastern Mojave
Genesis- CA	4,640	Colorado
Blythe- CA	7,025	Colorado
Blythe Energy II- CA	9,400	Colorado
Palen- CA	4,195	Colorado
Desert Sunlight- CA	4,165	Colorado
Amargosa Farm Road - NV	4,350	Eastern Mojave
Calico	4,604	Western Mojave

i. Major Actions outside the Action Area and within the Affected Recovery Unit

Since the 1989 listing of the desert tortoise, multiple other projects and activities have undergone section 7 consultation and subsequent approval by BLM and other Federal agencies for livestock grazing, wild horse and burro management, flood-control, mineral material excavations, utility infrastructure, highway improvements, land disposals (from BLM to private), and OHV events. Most of these actions fall under purview of existing BLM and Federal Highway Administration PBOs. Major utility corridors on BLM land occur in the Northeastern Mojave Recovery Unit approximately parallel to U.S Highway 93 and I-15, north and northeast of Las Vegas, respectively. Major roads and highways in the recovery unit include U.S Highway 93, I-15, U.S Highway 95 (northwest of Las Vegas), State Route 168.

The western portion of the Northeastern Mojave Recovery Unit is part of the Service's Desert National Wildlife Range. The southern and southeastern portion of the recovery unit includes portions of the Lake Mead National Recreation Area and Grand Canyon-Parashant National Monument which are managed by the National Park Service, and Red Rock Canyon National Conservation Area managed by BLM. The Valley of Fire State Park occurs in the eastern portion of the recovery unit. With the exception of the Refuge, the National Park Service, BLM, and State Parks manage these areas for public recreation. BLM's Nellis Dunes Special Recreation Area at the northeastern edge of the Las Vegas Valley is an open area available for public recreation which is not limited to existing roads and trails.

In addition to the solar energy project identified above (Table 2), numerous actions have occurred or undergone section 7 consultation outside the action area but within the Northeastern Mojave Recovery Unit that resulted in important effects to the desert tortoise. These actions are summarized below.

Ely District- BLM PBO

On July 10, 2008, the Service issued a PBO to BLM's Ely District for future proposed projects that may result in adverse effect to the desert tortoise and its critical habitat, and four other listed species, two of which have critical habitat (File No. 84320-2008-F-0078). During the 10-year term of the biological opinion, the Service exempted incidental take of 47 desert tortoises through injury or mortality and approximately 972 tortoises captured and relocated from project sites. In addition, up to 59,375 acres of desert tortoise critical habitat and up to 109,740 acres of non-critical desert tortoise habitat could be disturbed as a result of the proposed action; 62 percent of the anticipated critical habitat disturbance and 66 percent of the non-critical habitat disturbance would occur as a result of vegetation management such as habitat improvement.

To date, no desert tortoises have been reported killed or injured; one tortoise has been moved from harm's way; and 284 acres of desert tortoise critical habitat and 142 acres of non-critical habitat have been or soon will be disturbed.

Federal Highway Administration PBO

On September 27, 2010, the Service issued a PBO to the Federal Highway Administration for funding road and highway projects and use of mineral material sites for these projects over a 10-year period. The NDOT would be the primary non-Federal proponent of projects and activities under the PBO. The Federal Highway Administration and the Service anticipate that up to 4,468 acres of non-critical and 1,170 acres of critical desert tortoise habitat may be disturbed as a result of programmatic activities.

Other Major Federal Activities

On December 3, 1993, the Service issued a biological opinion to BLM for construction of the Harry Allen Power Generating Plant. The project resulted in disturbance of 523 acres of desert tortoise habitat and the Service exempted incidental take of two desert tortoises through injury or mortality and up to 40 desert tortoises through capture and relocation from harm's way.

On September 29, 2004, the Service issued a PBO to BLM for proposed activities in the Red Rock Canyon National Recreation Area west of Las Vegas. BLM and the Service anticipated that up to 5,000 acres could be disturbed and 351 desert tortoise incidentally taken during the 10-year term of the biological opinion.

On December 20, 2004, the Service issued a PBO to BLM for proposed actions in the Las Vegas Valley. BLM and the Service anticipated that up to 41,484 acres could be disturbed and 1,723 desert tortoise incidentally taken within the urbanized Las Vegas Valley. This consultation will remain in effect until a comprehensive PBO is completed to cover all BLM activities except renewable energy projects on BLM lands in the Las Vegas District's jurisdiction.

On July 27, 2007, the Service issued a biological opinion to the Federal Aviation Administration for their proposed development of the Mesquite Regional Airport. The project would result in

disturbance of 780 acres of desert tortoise habitat. The Service exempted incidental take of one desert tortoise through injury or mortality and up to 10 desert tortoises through capture and relocation from harm's way.

Large-Scale Translocation Site (LSTS)

The LSTS was established in the mid-1990s as a recipient site for desert tortoises displaced from development in Clark County, Nevada; found in harm's way and must be relocated to a secure area outside their home range; or unwanted pets. The LSTS is located near Jean, Nevada, and is bounded by State Route 161 on the north which is fenced to exclude tortoises, I-15 on the east, the high elevation of the Spring Mountains on the west, and a tortoise-proof fence approximately 3 miles north of the California state line on the south. The LSTS encompasses approximately 28,000 acres of public land managed by BLM's Las Vegas Field Office. Approximately 8,000 desert tortoises haven been released into the LSTS since 1997.

Field et al. (1997) conducted a study on translocated desert tortoises at the LSTS. The study used 32 adult desert tortoises and 10 juvenile tortoises. In the first year, the mortality rate for translocated desert tortoise was 21.4 percent. Data suggest that drought conditions at the site rather than the translocation itself negatively affected the tortoises. None of the tortoises died during their second season at the LSTS.

j. Habitat Conservation Plans (HCPs) in the Affected Recovery Unit

Approximately 89 percent of Clark County consisted of public lands administered by the Federal government, thereby providing little opportunity for mitigation for the loss of desert tortoise habitat under an HCP on non-Federal lands. Alternatively, funds are collected under HCPs and spent to implement conservation and recovery actions on Federal lands as mitigation for impacts that occur on non-Federal lands. Lands managed by BLM are included in these areas where mitigation funds are used to promote recovery of the desert tortoise.

The Southeastern Lincoln County Multiple Species Habitat Conservation Plan (MSHCP) was developed by three applicants (Lincoln County, City of Caliente, and Union Pacific Railroad), BLM, and the Service. This MSHCP and associated incidental take permit exempts incidental take for the desert tortoise and southwestern willow flycatcher (*Empidonax traillii extimus*) within the 30,000-acres permit area while contributing to the conservation for these two listed species. The MSHCP will benefit the tortoise by 1) restoring habitat impacted by wildfires, 2) assisting with development and implementation of a head starting program, 3) providing funding for much needed research, 4) translocating tortoises out of harm's way, 5) fencing development areas, and 6) prohibiting the possession of pet tortoises.

On November 22, 2000, the Service issued an incidental take permit (TE-034927) to Clark County, Nevada, including cities within the County and NDOT for actions proposed in their MSHCP. The incidental take permit allows incidental take of desert tortoise for a period of

30 years on 145,000 acres of non-Federal land in Clark County, and within NDOT ROW, south of the 38th parallel in Nevada. As partial mitigation under the MSHCP, the County purchased a conservation easement from the City of Boulder City in 1994. The term of the easement is 50 years and it will be retained in a natural condition for recovery of the desert tortoise and conservation of other species in the area. Certain uses shall be prohibited within the easement including motor vehicle activity off designated roads, livestock grazing, and any activity that is inconsistent with tortoise conservation. Much of the easement also designated desert tortoise critical habitat. Within the boundary of the easement, Boulder City reserved the Solar Energy Zone for energy development projects in addition to adjacent energy generation facilities previously described. Nevada Solar One, Copper Mountain, and Copper Mountain North (Table 2) occur in the Solar Energy Zone.

3. Status of Critical Habitat of the Desert Tortoise

The Service designated critical habitat for the desert tortoise in portions of California, Nevada, Arizona, and Utah in a final rule, published February 8, 1994 (59 Federal Register 5820). Considering the proposed action will not result in adverse effects to critical habitat, any further discussion or evaluation of critical habitat will not be included in this biological opinion.

D. ENVIRONMENTAL BASELINE

Action Area

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02).

The action area for the Moapa dace is defined as the entire range of the Moapa dace and the hydrogeomorphic basins which have hydrologic connectivity to the Muddy River ecosystem. Although the entire White River Groundwater Flow System is hydrogeologically connected, only the basins that include the area of the proposed groundwater development and location of the Moapa dace and its habitat are included in the action area. These basins include the Coyote Spring Valley (Basin 210), Muddy River Springs Area (Basin 219) and California Wash (Basin 218).

The action area for the desert tortoise includes the 2,141-acre solar facility site; 7.86-mile access road; 4.66-mile 500kV transmission line; 2.9-mile 12kV transmission line; 1-mile water pipeline; these project proponents are described in the Description of the Proposed Action section of this biological opinion. In addition, the action area includes a 0.5-mile wide buffer around the solar facility project boundary and along each side of linear project areas, the proposed desert tortoise translocation areas, all contiguous desert tortoise habitat within 0.93 mile of the translocation areas receiving desert tortoises from less than 1,640 feet, all contiguous desert tortoise habitat within 4.0 miles of translocation areas receiving desert tortoises from greater than 1,640 feet away. We included the 0.5-mile buffer to address adverse effects to desert tortoises whose home

ranges overlap the proposed solar facility and linear project areas; the buffer is based on the assumption that the home range of a male desert tortoise is approximately 0.77 square mile (Duda et al. 1999, Harless et al. 2009). We included habitat within 0.93 and 4.0 miles of the translocation areas to address the area in which desert tortoises may disperse following translocation. For situations where desert tortoises are translocated less than 1,640 feet, the buffer is based on the maximum straight-line distance that a male desert tortoise traveled in the first year following translocation (Walde et al. 2008). For situations where desert tortoises are translocated more than 1,640 feet, the buffer is based on the upper limits of the 95 percent confidence interval for the maximum straight-line distance that male and female desert tortoises were observed to disperse during the first year after release (Nussear 2004, Field et al. 2007, Drake et al. 2009).

1. Status of the Moapa Dace in the Action Area

The action area encompasses the entire range of the Moapa dace; therefore, the status of the Moapa dace in the action area is the same as the description of the rangewide status of the Moapa dace discussed above.

2. Factors Affecting the Moapa Dace in the Action Area

a. Groundwater Use Memorandum of Agreement

On July 14, 2005, a MOA was signed by SNWA, Meadow Valley Water District (MVWD), CSI, Tribe, and the Service, regarding groundwater withdrawal of 16,100 afy from the regional carbonate aquifer in Coyote Spring Valley and California Wash Basins that included conservation measures for the Moapa dace. The MOA outlined specific conservation actions that each party would complete in order to minimize potential impacts to the Moapa dace should water levels decline in the Muddy River system as a result of the cumulative withdrawal of 16,100 afy of groundwater from two basins within the regional carbonate aquifer system. The MOA and PBO include the following conservation measures:

1. Provide funding toward restoration of Moapa dace habitat on the Apcar Unit of the Moapa Valley NWR;

2. Develop a Recovery Implementation Program which will be used to effectuate the goals of the MOA by implementing measures necessary to accomplish the protection and promote the recovery of the Moapa dace, as well as, outline the development of regional water facilities and include additional parties as appropriate. The Recovery Program will be developed for the purposes of continuing to identify the key conservation actions that, when implemented, would continue to contribute to off-set any pumping impacts that may result from groundwater pumping;

3. Assist in developing an ecological model to investigate the effects of habitat change on the ecology of the Moapa dace;

4. Construct fish barriers in order to prevent additional non-native fishes from migrating into Moapa dace habitat;

5. Eradicate non-native fish, such as tilapia from the historic range of Moapa dace;

6. Restore habitat necessary for the Moapa dace, and take other steps to protect and recover the dace;

7. Provide the use of the Tribal greenhouse to cultivate native plants for restoration actions in the Muddy River area;
8. Provide access to Tribal lands for the construction and maintenance of at least one fish barrier;

9. Dedicate the existing Jones Spring water right (MVWD) with a flow rate of 1.0 cubic feet per second (cfs) towards establishing and maintaining in-stream flows in the Apcar tributary system that empties into the Muddy River; and

10. Dedicate 460 afy of CSI appropriated water rights to the survival and recovery of the Moapa dace, in perpetuity through a conservation easement to the Nevada State Engineer.

11. Establish a Hydrologic Review Team to develop and coordinate regional monitoring efforts of the groundwater pumping proposed under the MOA. Team members discuss and perform analyses of groundwater pumping effects and natural climatic variation on the Muddy River and Muddy Springs.

12. Develop the Muddy River Recovery Implementation Program to provide a comprehensive program for water resource management in the Coyote Spring Valley, Warm Springs, and Muddy River areas, while working toward recovery of the Moapa dace.

On January 30, 2006, the Service issued a non-jeopardy intra-Service PBO for the Proposed Muddy River MOA (File No. 1-5-05-FW-536). The Service estimated the incidental take of Moapa dace at the programmatic level for the cumulative actions of parties to the MOA to be a 22 percent loss in riffle habitat and 16 percent loss in pool habitat. Should flows at the Warm Springs West gage decline to a flow below 2.78 cfs, the amount of incidental take for any project-specific action under the MOA would be exceeded for the Moapa dace.

Four projects have been proposed under the PBO, three of which have moved forward and have been tiered to the PBO: 1) issuance of a Section 404 permit under the Clean Water Act of 1972, as amended, for the CSI residential development project (Tier 1); 2) for a ROW to SNWA to construct a water conveyance pipeline (Tier 2), and 3) construction of a water pipeline from an existing well on the Moapa River Indian Reservation to the Moapa Valley of Fire Travel Plaza requiring 7 afy of groundwater (Tier 4). Tier 3 was the proposed cement plant which was withdrawn without a biological opinion being issued. Tiers 1 and 2 are major projects and are discussed in detail below.

- **Tier 1:** CSI proposes to withdraw their 4,600 afy of State-appropriated water from two well locations in Coyote Spring Valley in order to help meet the water demands of its proposed residential community. Monitoring of surface flows and groundwater levels is required by the State Engineer as a condition of CSI's groundwater permits in Coyote Spring Valley. This monitoring will provide necessary information to assess long-term impacts to the aquifer and down-gradient flows (Resource Concepts Incorporated 2005). Currently, SNWA monitors eight carbonate wells in the Coyote Spring Valley hydrographic basin on a continuous basis, and one carbonate well and four alluvial wells on a monthly basis.

- **Tier 2:** This project involves SNWA constructing a pipeline to convey groundwater withdrawals from potentially three carbonate wells located in the Coyote Spring Valley to participate in a regional carbonate aquifer system study ordered by the Nevada State Engineer (Order 1169) to evaluate how groundwater withdrawals in the Coyote Spring Valley will impact the carbonate aquifer system and adjacent Muddy River ecosystem. The Order requires pumping at least 8,150 afy from the Coyote Spring Valley for 2 consecutive years. In order to meet the requirements of the Order, SNWA is pumping 9,000 afy of groundwater from the regional carbonate system. Any unused water will empty into the Reed Bowman Reservoir. Should the reservoir reach full capacity, flows will continue into the lower Muddy River. Upon completion of the study, the pipeline system would convey permitted water rights to beneficial uses. Should the results of the study indicate that water rights in the Coyote Spring Valley are fully allocated; the SNWA would use the proposed pipeline to transfer their permitted water rights from other areas outside of Coyote Spring Valley. The project would also provide a means to convey 724 afy of SNWA's permitted Coyote Spring groundwater rights to MVWD. This would facilitate the dedication by MVWD of its existing 1.0 cfs Jones Spring water right for the purpose of providing in-stream flows that will be beneficial to the Moapa dace.

The Service reviewed the updated monitoring information including instream flow criteria established in the MOA. The minimum instream flow criteria measured at the Warm Springs West Flume determine thresholds that would trigger certain conservation actions including reductions in groundwater pumping. The first instream flow to trigger an automatic groundwater reduction is 3.0 cfs. According to monitoring data, the current instream flow at the Warm Springs West Flume is 3.5 cfs. The 3.5 cfs is a reduction of 0.1 cfs from before pumping was initiated. Therefore, based on the monitoring information provided, we have not reached any instream flow trigger points analyzed in the biological opinion. If instream flows reach 3.2 cfs at the Warm Springs West Flume, the signatories to the MOA will meet to discuss, compare, and evaluate the hydrology data.

As predicted in the PBO, higher elevation springs (e.g., Pederson and Pederson East Springs) would be impacted first. Flows in these two springs have been reduced by 35 to 40 percent. This reduction in flow has occurred despite withdrawal of groundwater below allowable levels. In addition, groundwater withdrawals have not been consistent since the testing period started on November 15, 2010. The variance between modeled and actual results will be evaluated further

as pumping tests continue. The reduction in flows at these two springs could affect Moapa Dace which was not anticipated fully through the modeling efforts used in the PBO (Chad Mellison, Service, Reno, Nevada pers. comm.).

Environmental baseline information for the Moapa dace prior to 2006 can be found in the PBO; updated information since 2006 is provided below.

b. Habitat Acquisition

In February 2006, the Secretary of the Interior approved funding through the Southern Nevada Public Lands Management Act for SNWA to purchase 1,218 acres of land historically known as the Warm Springs Ranch, located in the Moapa Valley. In 2007, the SNWA completed the purchase and committed to protect and preserve the property as a natural area. By purchasing the property, the SNWA was able to protect the majority of the Moapa dace population and its habitat, and prevent the property from being developed for residential purposes.

c. Habitat Improvement Projects and Predator Control

On July 17, 2008, the Service issued a biological opinion (File No. 84320-2008-F-0417) to the U.S. Army Corps of Engineers for their proposed issuance of a permit to SNWA for habitat restoration, establishment, and enhancement activities in the Lower Pederson Stream of the Warm Springs Natural Area. The permit would allow SNWA to restore part of the lower Pederson channel to a pre-modified alignment and construct an artificial channel connecting the stream to the channel. Incidental take of all Moapa dace occurring in the project area may be harassed during the course of activities, which is estimated to be approximately 100 fish. An additional 20 Moapa dace may be harmed (wounded or killed) during the course of salvage activities. An unknown number of Moapa dace eggs and/or larvae may be harmed during the course of activities due to desiccation of approximately 3,229 square feet of sheet flow.

d. Wildfires

Since the PBO was issued in 2006, a major wildfire occurred on July 1, 2010, affecting the Moapa dace. According to population survey data, up to 60 percent of the existing Moapa dace occurred within the action area at the time the fire started. Post-fire survey data indicate that most dace within the affected area quickly moved to safer areas in response to the fire. Although the number of dace that were lost during the fire is unknown, the Service estimates that less than 50 individuals were lost during the event and in the immediate aftermath.

3. Status of the Desert Tortoise in the Action Area

a. Habitat

Vegetation within the project area is composed primarily of creosote bush scrub as defined by Holland (1986) classification of plant communities. Disturbed areas are associated with multiple

dirt roads and less impacted off-road-vehicle trails, adjacent railroad and interstate highway (to the east) and adjacent transmission line and natural gas line corridors (to the north and west).

The Mojave Creosote Bush Scrub community is dominated by creosote shrubs (*Larrea tridentate)* and white bursage (*Ambrosia dumosa*). Many species of annuals may be observed in late March and April if the winter rains are sufficient. Other, less abundant species of annuals appear following summer thundershowers. Approximately 1,760 acres of this community type exists within the proposed solar facility boundary.

Barren to sparsely vegetated habitat occurs on steep rocky slopes and cliffs that dominate the three major drainages located within the proposed solar facility boundary. Plants associated with these rocky outcrops typically include cacti and yucca species. An approximate 240 acres of barren to sparsely vegetated areas exist along and between the steep rocky drainages within the proposed solar facility boundary.

The poorly developed soils, almost completely absent in some areas, are mostly clayey sands, usually with abundant caliche-coated rocks present. Site soils are generally shallow, rarely in excess of 18 inches in depth, even in areas away from the base of the mountains, and are typically about 4 inches in depth over an underlying caliche layer. Near the base of the Arrow Canyon Range the valley fills give way to bedrock pediment and eventually to an abrupt upward change in slope at the base of the core of the mountain where benched outcrops are exposed. On the core of the mountain, shallow soils are typically present only in small areas where the gradient is less steep.

b. Desert Tortoises in the Action Area

Desert tortoise surveys of the 2,141-acre project footprint were conducted October 11-20, 2010, utilizing Service guidelines and methodology (Service 2010). In total, 300 transects were walked 33 feet apart and parallel to provide 100-percent coverage of the proposed solar facility. In addition to the 2,141 acre proposed solar facility survey, the proposed corridors or ROWs for the approximate 3.7-mile, 200-foot wide 500 kV transmission line and 25-foot wide, 0.5- mile water pipeline were surveyed. Biologists recorded tortoise sign (burrows, tracks, scat, and carcass) and sightings of live tortoises during the survey (Table 5). Live tortoises were visually inspected and details on health, size and sex were recorded. No tortoises were handled or harassed during the survey. Surveys of the project area identified desert tortoises and desert tortoise sign concentrated along east-west oriented ephemeral drainages. Desert tortoises also identified in the northwest portion of the solar facility where the substation and O&M areas are planned for construction. These areas have sandy-loam to light gravel-clay which is ideal for tortoise burrow construction. The drainages are observed to be corridors allowing desert tortoises to move through the project area, while providing forage availability and suitable sheltersites.

In areas that desert tortoises and desert tortoise sign were not observed, soils typically were abundant with caliche which were not suitable for burrow construction. Vegetation in these areas was either absent or vegetation species were not consistent with desert tortoise diet such as a lack

of cacti species throughout the area. According to field surveys conducted in 2010, these areas included the southwestern portion and north central portion of the project area.

Table 5. Desert tortoise sign observed during surveys of the proposed solar facility.

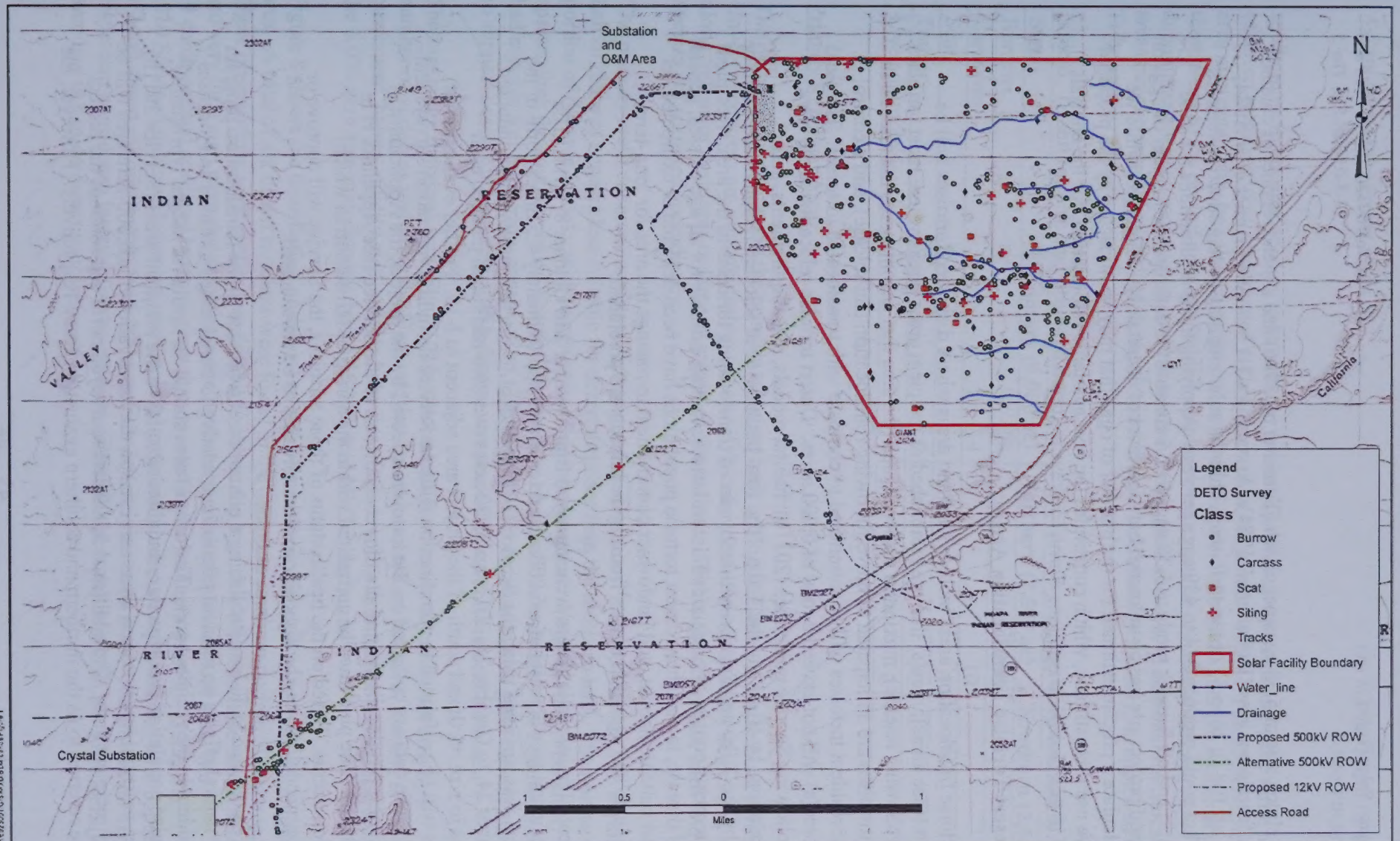
Sign	Solar Field	Water Pipeline ROW	12kV ROW	500kV ROW
Burrows	458	2	37	56
Carcasses	25	0	0	1
Scat	26	0	0	2
Tracks	2	0	0	0
Live adult/subadult tortoises, ≥160mm	26	0	0	5
Live juvenile tortoises, <160mm	8	0	0	0

Since this initial survey, the original 500kV transmission line route and water pipeline route were modified to the new proposed routes within the BLM utility corridor and to a location further north of the original alignment, respectively. These new alignments as well as the 12 kV transmission line route were surveyed in October 2011. During the survey, 37 desert tortoise burrows were found within 15 feet of either side of the proposed ROW for the 12 kV transmission line and 56 burrows along the up to 500 kV transmission line; no live tortoise were found.

The distribution of tortoise sign within the footprint of the proposed solar facility boundary as well as along the alternative 500 kV transmission line and water pipeline ROW is shown in Figure 5. Survey totals below include the permanent construction footprint within the solar field boundary since this will be the only area where translocation of desert tortoise will take place. Winter rainfall for the 2009 winter season for North Vegas was 1.78 inches according to the Western Regional Climate Center. Using the 2010 Service guidance document, protocol and population estimate equation, the total population of adult desert tortoise within the 2,000-acre solar facility boundary is estimated to be 51. The lower and higher 95-percent confidence interval for the estimate of tortoise abundance within the solar facility boundary (Buckland et al. 2001) is 25 to 103 desert tortoises.

In addition to subadult and adult desert tortoises, the project area supports hatchling and juvenile (i.e., less than 6 inches) desert tortoises and eggs. Estimating densities of hatchling and juvenile desert tortoises is difficult because of low detection probabilities due to their small size and cryptic nature. However, based on a 4-year study of their population ecology, Turner *et al.* (1987) determined that juveniles accounted for 19 to 81 percent of the overall population. Using this range and the estimated 51 to 103 subadult and adult tortoises within the solar site, we estimate that the project footprint may support 20 to 83 juveniles.

In addition, we expect the project area to support desert tortoise eggs if cleared during the desert tortoise nesting period, approximately May and June (Turner *et al.* 1984; Wallis et al. 1999). Estimating the number of tortoise eggs is extremely difficult given that the eggs are buried beneath the soil surface. To estimate the number of eggs that could be present on site, we used



MALCOLM PIRNIE

K Road Power
San Diego, California

K Road Moapa Solar Project

Moapa River Indian Reservation

Desert Tortoise
Survey Results

MALCOLM PIRNIE, INC.

FIGURE 5

the mean clutch size of 5.38 eggs per clutch (Turner *et al.* 1986) and a mean number of clutches of 1.6 per female per year (Turner *et al.* 1984). Assuming a 1:1 sex ratio (Turner *et al.* 1984; Turner *et al.* 1987), 26 to 51 desert tortoises within the solar site may be reproductive females that together could produce 224 to 439 eggs per year. Applying these assumptions (i.e., the 1:1 sex ratio and all females produce 5.38 eggs in 1.6 clutches) to estimate the number of eggs on the proposed project site has an unknown but high level of uncertainty. Therefore, while we cannot calculate a precise estimate for the number of eggs that may be impacted by the proposed project, we use this estimate, which constitutes the best available information, for the analysis contained in this biological opinion.

c. Desert Tortoise Translocation Areas

Desert tortoise translocation areas include sites and areas where displaced tortoises will be released (release areas); area(s) that are established as recipient areas (areas where most tortoises establish following release), maximum dispersal area (the area that encompasses the maximum distances tortoises are anticipated to move following translocation and release), and a control area where resident tortoises will be monitored to compare with translocated tortoises. The final recipient area(s) will not exceed a total of 6,000 acres. Desert tortoise relocation areas were selected following Service guidelines (2011b), habitat models, size requirements, and recommendations by BLM and the Tribe. The final boundaries of selected recipient areas will be approved by the Tribe and Service within 2 years of translocating tortoises to the area. Recipient area requirements consist of presence of desert tortoise habitat suitable for all age classes, general absence of disease, lands where desert tortoise populations have been depleted or extirpated yet still support suitable habitat, and landowner commitment to manage the area for long-term conservation so that potential threats from future impacts are precluded.

Three potential translocation areas were surveyed from October 2 to October 8, 2011. The primary recipient area consists of a 6,000-acre release area approximately 4.5 miles north of the project area, was surveyed using the Service (2009) protocol. A second survey was conducted from October 24, to October 28, 2011, on 5,000 acres over two additional parcels, each 2,500 acres in size north and south of the project area adjacent to I-15. Further evaluation of these areas will be performed in coordination with the Service including vegetation surveys and sampling. Once data are collected on the tortoises affected by the project, the Applicant will prepare a desert tortoise disposition plan for each tortoise to the Service (see Appendix H in Service 2011b). The plan must be completed within the spring or fall season in which translocation occurs. Based on the health status of those tortoises, the Service will approve or make recommendations on the disposition of the tortoises to be translocated.

The Service guidance includes establishing a control area to be used in the translocation program to monitor natural effects on resident populations relative to translocated tortoises and tortoises that are resident in the recipient area. The control area should be similar in habitat type/quality, desert tortoise population size/structure, and disease status to the recipient areas (Service 2011b). Of the three potential translocation areas surveyed on the Reservation, the 6,000-acre area will be the primary recipient area. The additional 5,000 acres surveyed north and south of the project area will be referred to as the northern and southern evaluation areas, respectively. However, the

southern recipient area appears to have better habitat quality and approximately the same number of desert tortoises were documented at this location as the primary recipient area; therefore, this area may potentially be selected as the control area. Figure 6 shows the relative locations of these areas to the project area and Table 6 displays desert tortoise and desert tortoise sign documented at each recipient or evaluation area during field surveys. Additional translocation areas may be selected to replace or supplement the selected sites if necessary, as approved by the Tribe and Service.

Table 6. Desert tortoise sign observed during surveys of primary recipient and evaluation areas.

Sign	Primary (6,000 ac)	Northern (2,500 ac)	Southern (2,500 ac)
Burrows	428	263	320
Carcasses	14	10	4
Scat	1	1	0
Tracks	0	0	0
Live adult tortoises	6	2	4

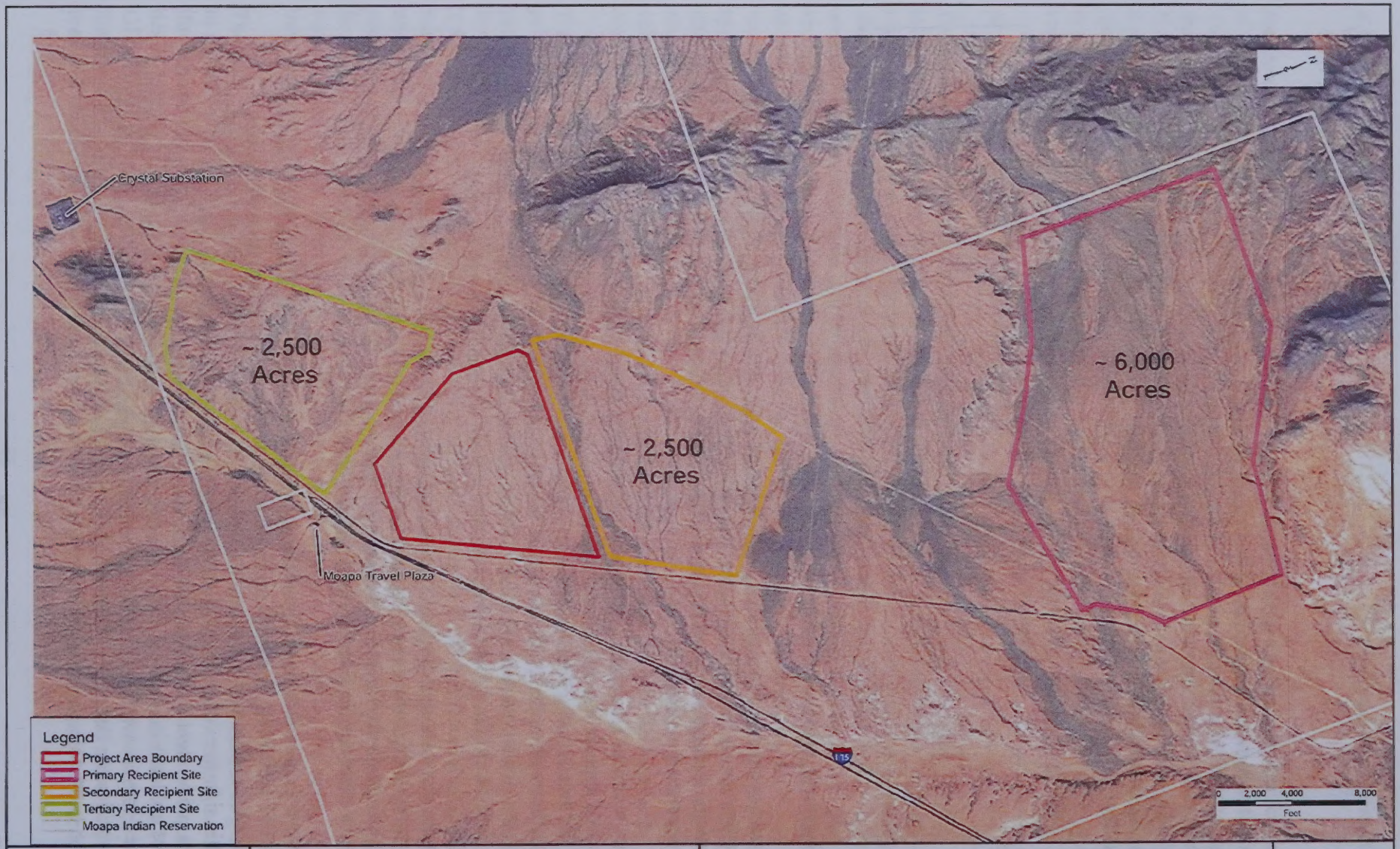
Primary Recipient Area

The dominant vegetation in the primary recipient area is Mojave Desert creosote bush scrub. Unvegetated areas are interspersed on the area, typically located on steep rocky slopes and cliffs along the major drainages or large expanses of flat caliche. Within the drainages, cacti and yucca species are scattered sporadically.

The primary recipient area consists of fair to good quality desert tortoise habitat. The northern half of the area appears less suitable for desert tortoises than the southern half. The northern portion of the area is rocky with larger areas of desert pavement. Vegetation was generally sparser than the southern half. The drainages where observations and signs were documented had suitable soil for burrow construction. These areas are contiguous with good habitat quality to support desert tortoises. Available forage was present to sustain resident tortoises.

The maximum dispersal area (Figure 7) is determined for the primary recipient area by a number of variables including the locations that desert tortoises are released, barriers to movement, habitat quality, and tortoise behavior. Based on this information, tortoises released in the 6,000-acre area may disperse into a 26,362-acre (41.2 miles^2) area.

Figure 8 shows the distribution of desert tortoise observations and sign in the primary recipient area. A total of six desert tortoises were found in the central to southern portion of the area. These observations were within two drainages across the area. No desert tortoise observations and very little sign were documented in the northern portion of this recipient area, and 14 carcasses and scattered burrows were documented in the southern portion. Using the 2010 Service guidance document, protocol and population estimate equation, the total population of adult desert tortoise within the 6,000-acre primary recipient area is 19. The lower and higher 95-percent confidence interval for the estimate of tortoise abundance within the solar facility boundary is 8 to 44 desert tortoises.

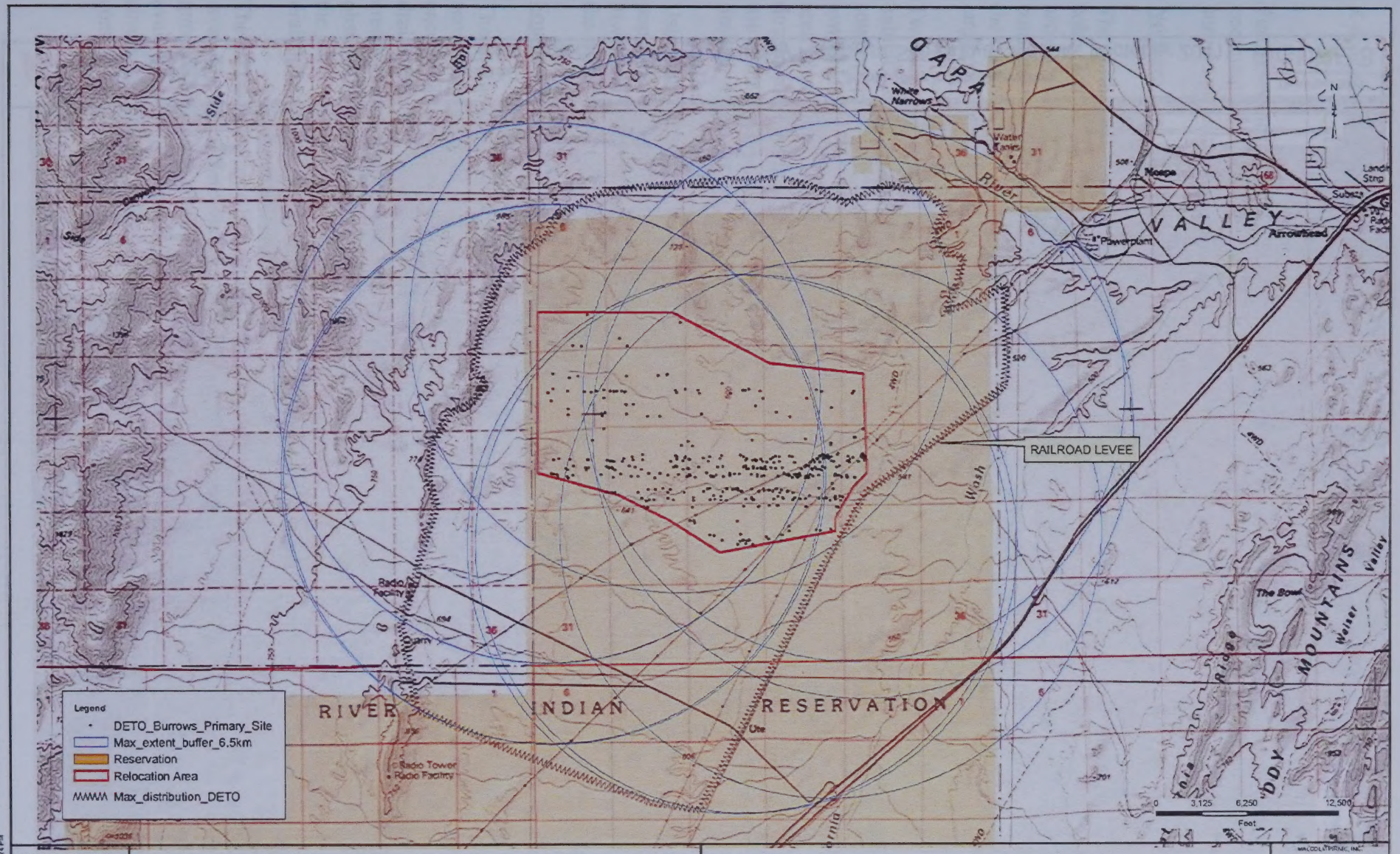


ARCADIS

K Road Power
San Diego, California
KRoad Moapa Solar Project

Moapa River Indian Reservation
Proposed Translocation Recipient Site Locations

December 2011
FIGURE 6



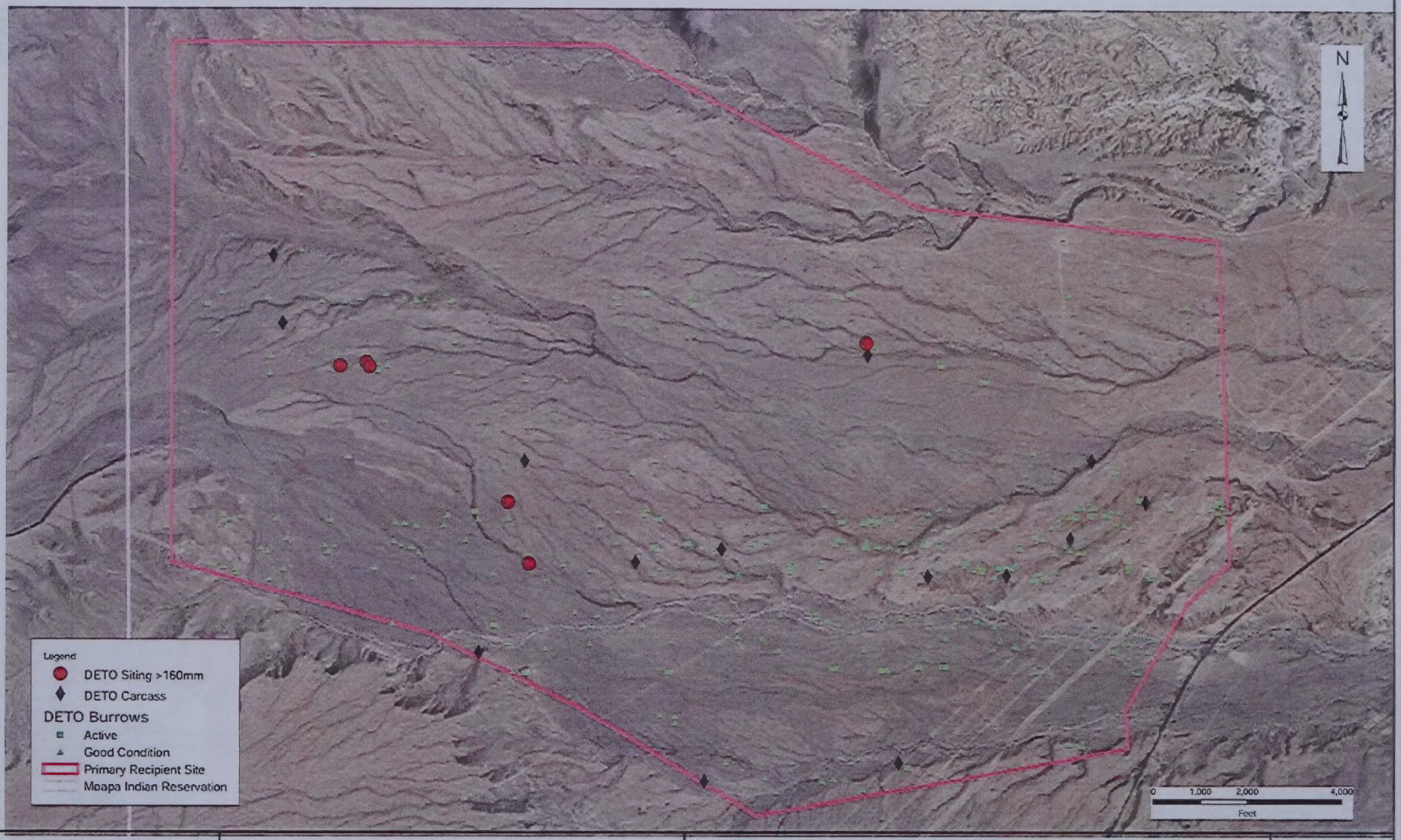
MALCOLM PIRNIE

K Road Solar San Diego, California

KRoad Moapa Solar Facility

DETO DISTRIBUTION MAP
6.5 KILOMETER MAX EXTENT

FIGURE 7



ARCADIS

K Road Power
San Diego, California
KRoad Moapa Solar Project

Moapa River Indian Reservation
Primary Recipient Site Survey Results (October 2011)

December 2011
FIGURE 8

Further evaluation of this area and surrounding maximum dispersal area will be performed in coordination with the Service prior to final approval as a recipient area including vegetation surveys and sampling proposed for spring 2012.

Northern Evaluation Area

The northern evaluation area is a 2,500 acre area north and directly adjacent to the 2,141 acre solar facility. Surveys were conducted in this area in October 2011. The habitat quality of this area is similar to that of the primary recipient area. Mojave Desert creosote bush scrub was consistent throughout the area with periodic unvegetated areas. A major drainage is present in the central portion of this area. Unsuitable soil with a top layer composed of caliche covered a large portion of the area.

Two desert tortoises were observed in the southern portion along ephemeral drainages. The best habitat quality identified on the northern evaluation area occurred along a drainage in the southern portion. The drainage provided suitable soil for burrow construction as well as available forage to support desert tortoises. A steep canyon occurs in the central portion of this area where three carcasses were found with a small number of burrows. Three carcasses also documented in the northern area. Because of the noncontiguous distribution of suitable habitat, use of the central portion of the recipient area by tortoises is limited. Cover in the area also is limited. Excluding the southern portion of the area, most of the habitat was poor quality.

Using the 2010 Service guidance document, protocol and population estimate equation, the total population of adult desert tortoise within the 2,500-acre northern evaluation area is 12. The lower and higher 95-perrcent confidence interval for the estimate of tortoise abundance within the northern evaluation area is 3 to 48 desert tortoises.

Southern Evaluation Area

The southern evaluation area was surveyed during October 2011. Mojave Desert creosote bush scrub dominates the area. This area is located south and adjacent to the solar facility, encompassing 2,500 acres. The northern portion of the area is composed of steep, rocky drainages that are fairly unvegetated. Smaller washes fan out from these rocky drainages, creating sandy-loam to light gravel-clay soils, indicating good habitat. Four desert tortoise observations were documented during field surveys. Two desert tortoises were observed each in the northern and southern areas. The northern observations were identified along an ephemeral drainage extending from east to west across the area.

The northern drainage had similar habitat qualities as drainages located in the primary recipient area. The desert tortoises located in the southern portion were located in sandy-loam to light gravel clay soils. This soil type is ideal for excavating burrows. Good quality habitat is more available and interspersed throughout the southern evaluation area. Because of the area's similarity to the solar site, the southern evaluation area may potentially be designated as the control area.

Using the 2010 Service guidance document, protocol and population estimate equation, the total population of adult desert tortoise within the 2,500-acre southern evaluation area is 22. The lower and higher 95-percent confidence interval for the estimate of tortoise abundance within the solar facility boundary is 8 to 64 desert tortoises.

d. Conclusions - Status of the Recipient and Evaluation Areas

Three areas were identified to potentially accept desert tortoises removed from the project area or used for monitoring resident tortoises (control area). A control area will be established which may be one of the evaluation areas. Because suitable habitat is patchy within the recipient area, translocated tortoises from the solar site will be released at appropriate locations within suitable habitat. Tortoises released into the primary recipient area may disperse into a 41.2-square mile area; however, the final designated recipient area will not exceed a total of 6,000 acres.

The health of translocated tortoises, and resident tortoises at the recipient area and the control area will be assessed and a radio transmitter attached to each tortoise (Service 2011b). The translocation process includes gathering data on sex, age, and health conditions of resident tortoises. This information will be used in conjunction with the same information collected from desert tortoises in the project area during clearance surveys to develop desert tortoise disposition plans and determine placement of translocated tortoises.

4. Factors Affecting the Desert Tortoise in the Action Area

a. Kern River Gas Transmission (KRGT) Project

Two parallel natural gas pipelines operated by Kern River traverse the southeastern portion of the proposed primary recipient area and proposed BLM ROW for the project power transmission line. Features of the pipeline ROWs that co-occur in the action area for the solar project include the utility (main) access road where the road crosses over the ROWs in two locations. The pipeline projects required a license from the Federal Energy Regulatory Commission (FERC), ROWs from BLM, and permit from the Army Corps of Engineers. The biological opinion for the first KRGT pipeline was issued to FERC on December 21, 1990 (File No. 1-1-87-F-36R). The Service concluded that 45 desert tortoises may be killed or injured; 424 desert tortoises harassed; and 93 desert tortoise nests destroyed. As of June 24, 1991, approximately 23 deaths and 253 captures/movements of desert tortoise were recorded by Kern River along the pipeline ROW. Problems associated with vehicular traffic on the ROW and access roads may have contributed to the mortalities in combination with high desert tortoise activity levels that were not anticipated. Consequently, on June 24, 1991, FERC requested reinitiation of formal consultation for the project based on a high incidence of desert tortoise mortality and captures/movements on the pipeline project, which exceeded those limits established in the incidental take statement. The Service responded by letter dated June 28, 1991, and under reinitiation of consultation, imposed additional minimization measures, increased the capture/movement limits for desert tortoise from 294 to an unlimited number, and injury/mortality limits from 25 to 35.

On July 9, 2002, the Service issued a biological opinion (File No. 1-5-02-F-476) to FERC for construction, operation, and maintenance of the second KRGT pipeline, adjacent to the first pipeline. The second pipeline project approximates the previous pipelines constructed under the 1990/1991 biological opinions. The pipeline ROW crosses approximately 318.8 miles of potential desert tortoise habitat, of which about 102.9 miles traverse desert tortoise critical habitat. Pipeline construction resulted in disturbance of 4,182 acres of desert tortoise habitat including 1,333 acres of desert tortoise critical habitat. Approximately 50 feet of the construction ROW overlapped the previously-disturbed land that was affected by construction of the first KRGT pipeline. During construction of the second KRGT pipeline project, over 840 desert tortoises were encountered and one was killed as a direct result of project activities which includes only one desert tortoise in Utah; and approximately 380 tortoises in Nevada. One tortoise was killed on June 8, 2011, as a result of maintenance operations. Consequently, BLM and the Service agreed that the requirement for reinitiation of consultation had been triggered for O&M activities due to a desert tortoise mortality and additional effects to the desert tortoise due to a large-scale translocation project in the pipeline action area. On September 28, 2011, the Service issued a biological opinion to BLM for O&M of the KRGT pipelines (File No. 84320-2011-F-0337).

b. Calpine Corporation Natural Gas-Fired Power Plant

On December 20, 2001, the Service issued a biological opinion to the BIA for their proposed approval of a lease of Tribal land to Calpine Corporation for construction, operation, and maintenance of a natural gas-fired power plant. The lease would involve approximately 65 acres for the proposed 760 MW baseload natural gas-fired combined cycle power plant. An additional 33 acres of Tribal land may be used as borrow sites for construction activities which would require BIA approval. Peaking capacity of the plant may reach 1,100 MW. The project would be constructed, operated, and maintained under a long-term lease (25 years with a 20-year option) with Calpine Corporation for Tribal land and water use.

The project would include 500 kV electrical transmission lines and access roads on Tribal and BLM lands. The U.S. Environmental Protection Agency (EPA) proposed to issue an authority to construct permit to Calpine Corporation under the Prevention of Significant Deterioration program at 40 CFR § 52.21. The U.S. Army Corps of Engineers proposed to permit Calpine Corporation under section 404 of the Clean Water Act. BIA was the lead Federal agency for the consultation. No construction occurred and this project has not moved forward.

c. Sampling and Geotechnical Investigation for Proposed Cement Plant

In 2005, Ash Grove Cement Company, in cooperation with the Tribe, proposed to conduct preliminary studies in support of a proposed cement plant and limestone quarry on the Reservation. On August 24, 2005, the Service issued a biological opinion (File No. 1-5-05-F-497) to the BIA for their approval of the cement project. The project would locate suitable materials to develop the cement plant. The proposed project involved 23.7 acres of disturbance within a 298-acre area.

Area 1 of the proposed cement plant overlaps a portion of the western portion of the solar facility site. Surveys of Siting Area 1 occurred March 24 through 31, 2005. Desert tortoise sign found during the survey include: 63 burrows, 11 carcasses, 26 scats, and 12 live tortoises. In addition to the 63 typical Mojave desert tortoise burrows that were excavated in soil, there were numerous areas where outcroppings of cap rock with caliche caves and other naturally occurring cavities are present. The abundance of these naturally occurring caves would increase the number of useable tortoise dens from 63, to 100 to 120.

Desert tortoise surveys and tortoise removal from haul and construction road areas began in March 2006. These areas occur outside the action area for the proposed solar project. The cement plant project did not go forward; no biological opinion was issued.

d. Tribal Travel Plaza Water Pipeline

On August 6, 2007, the Service issued a biological opinion (File No. 1-5-05-FW-536, Tier 3) to the U.S. Department of Housing and Urban Development for their proposed funding to construct a water pipeline from and existing well to the existing Tribal Travel Plaza approximately 3 miles away. Construction of the water pipeline resulted in 17.57 acres of desert tortoise habitat disturbance. No desert tortoises were reported taken as a result of the project.

e. UNEV Pipeline

On November 13, 2009, the Service issued a biological opinion to BLM for ROWs for construction, operation, and maintenance of the UNEV petroleum pipeline (File No. 6-UT-09-F-023. The UNEV gas pipeline project aligns with the previous KRGT pipeline ROWs and crosses the main access road as described above for the KRGT Project. On April 8, 2011, a desert tortoise was killed after being buried under a spoil pile. A second tortoise was crushed by a project vehicle and killed on May 9, 2011. A third tortoise died on June 29, 2011, when it fell into an open project trench, exceeding the incidental take exempted in the biological opinion. Consultation was reinitiated and the Service issued a second biological opinion on July 1, 2011, exempting three additional desert tortoise mortalities or injuries (five in total). On July 18, 2011, BLM reported a fourth desert tortoise mortality when a project vehicle ran over and crushed a very small tortoise in the road. On August 20, 2011, UNEV reported the fifth tortoise mortality, a crushed desert tortoise on their ROW. The mortality report concluded that the mortality was caused by an unauthorized, private vehicle that illegally accessed the ROW.

On August 31, 2011, BLM requested a second reinitiation of consultation in response to the additional desert tortoise mortalities. On September 29, 2011, the Service issued a biological opinion for the UNEV pipeline project. The Service exempted incidental take of 12 desert tortoises through injury or mortality, including the 5 previously killed and 237 desert tortoises captured and moved from harm's way.

f. Other Existing Linear Disturbances and Anthropogenic Features

The Union Pacific Railroad crosses through the Reservation east of the solar site. I-15 occurs outside the Reservation, south and east of the solar site. I-15 has been fenced to exclude tortoises and thus restricts east-west movement of tortoises in the area. The railroad also presents a barrier to tortoise movement but tortoises are likely capable of crossing the railroad at certain locations. Several large culverts exist that allow tortoise passage underneath the levee for the railroad. Unpaved roads and the access road that extends beyond the paved portion of Las Vegas Boulevard provides public, Tribal, and project access to the action area. A northeast to southwest BLM utility corridor occurs within the Reservation, west and north of the solar site and recipient areas.

g. BLM PBOs in the Action Area

On November 25, 1997, the Service issued a PBO (File No. 1-5-97-F-251) to BLM for implementation of various land management programs within the Las Vegas District planning area excluding desert tortoise critical habitat and areas of critical environmental concern (ACECs), and outside the Las Vegas Valley. Activities proposed that may affect the desert tortoise in the action area include issuance of a ROW, Recreation and Public Purposes Act leases, mineral material sales and leases, and mining plans of operation. The programmatic consultation is limited to activities which may affect up to 240 acres per project, and a cumulative total of 10,000 acres excluding land exchanges and sales. Only land disposals by sale or exchange in Clark County (but outside the Las Vegas Valley) are covered under the consultation up to a cumulative total of 14,637 acres. Thus, a maximum total of 24,637 acres of desert tortoise habitat may be affected by the proposed programmatic activities.

On June 18, 1998, the Service issued a PBO (File No. 1-5-98-F-053) to BLM for implementation of various land management programs within desert tortoise habitat and the Las Vegas planning area, including desert tortoise critical habitat and ACECs. Activities that were proposed that may affect the desert tortoise in the action area include recreation; designation of utility corridors and mineral material extraction areas and designation of the desert tortoise ACECs.

E. Effects of the Proposed Action

Effects of the action refer to the direct and indirect effects of the proposed action on the species or critical habitat that would be added to the environmental baseline, along with the effects of other activities that are interrelated or interdependent with that action. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification.

Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur. Indirect effects can be both spatial and temporal in nature. In contrast to direct effects, indirect effects can often be more subtle, and may affect species and habitat quality over an extended period, long after project activities have been

completed. Indirect effects are of particular concern for long-lived species such as the desert tortoise, because project-related effects may not become evident in individuals or populations until years later.

1. Moapa Dace

The Moapa dace will not be directly affected by the physical construction and maintenance of the proposed action; however, groundwater pumping activities associated with the action are interrelated. The effects of the proposed groundwater pumping associated with the project on the Moapa dace were previously analyzed in the 2006 PBO, which evaluated the effects of the cumulative groundwater withdrawal of 16,100 afy from the carbonate aquifer in Coyote Spring Valley and California Wash on the endangered Moapa dace. The Tribe is only one of multiple parties that will be withdrawing groundwater from the Coyote Spring Valley and California Wash basins under the programmatic action. The anticipated effects from this project are consistent with those anticipated in the PBO. The use of 72 of the 16,100 afy during construction and up to 40 afy during O&M of the proposed solar project will contribute to adverse effects on the Muddy River Springs area discharge and subsequently the Moapa dace. Use of groundwater for the project will become part of the environmental baseline for future groundwater withdrawals for the affected aquifer.

2. Desert Tortoise

Direct Effects

Construction and O&M Effects on Desert Tortoises

Death and injury of desert tortoises could result from excavation activities such as clearing and grubbing of vegetation; trenching activities and entrapment in open trenches and pipes; and collisions with or crushing by vehicles or heavy equipment, including individuals that take shelter under parked vehicles and are killed or injured when vehicles are moved. Desert tortoises that enter or attempt to cross project access roads may be struck resulting in death or injury. Mortality mechanisms also include individual desert tortoises or their eggs being crushed or buried in burrows during construction and O&M-related activities. Because of increased human presence in the area, desert tortoises may be killed or injured due to collection or vandalism associated with increased encounters with workers, visitors, and unauthorized pets. Desert tortoises also may be attracted to the construction area by application of water to control dust, placing them at higher risk of death or injury. Desert tortoises also may be adversely affected by construction noise, ground vibrations, and artificial lighting.

We estimate that all life stages of desert tortoise that occur on the solar site and in harm's way on other project activity areas described above may be adversely affected by the proposed action. Our estimate of the numbers of desert tortoises and eggs that are likely to occur within the action area is mostly from pre-project survey data. We acknowledge, however, that not all individuals killed or injured during construction, operations, and maintenance activities will be detected by biological monitors or project staff and subsequently reported to us. The inability to detect all

tortoises is largely due to the cryptic nature of desert tortoises, fossorial habits, and limited abundance; and in the case of juveniles and eggs, their small size and location underground reduce detection probabilities of these life stages. Another confounding factor is that scavengers may locate, consume, or remove carcasses before monitors can locate them.

Overall, we expect death and injury of most subadult and adult tortoises to be avoided during construction and O&M activities through implementation and compliance of Conservation Measures 2, 3, 6, 7, 8, 9, and 11.

Project Access Effects

Primary access to the proposed solar site would be via I-15, Las Vegas Boulevard, and existing access road within the BLM utility corridor. Access to the project site requires improvements of the 0.5-mile access road at the mesa. No other road would be constructed outside of the perimeter security fence and permanent desert tortoise exclusion fencing. Access to project work areas outside of the fenced facilities may kill or injury desert tortoises due to increased use of existing routes.

The primary effect of project access on desert tortoises is the risk of vehicle strikes. Unless tortoise movement is restricted, implementation of Conservation Measures 2, 3, 7, 8, 11, and 12 are expected to minimize impacts to desert tortoises from access effects. Because all workers will participate in the WEAP (Conservation Measure 2) and speed limits will be limited to 25 mph (Conservation Measure 12), workers may be less likely to strike desert tortoises than a casual user. In addition, clearance surveys (Conservation Measure 8) and the use of authorized desert tortoise biologists and monitors during construction of the access roads (Conservation Measures 3, 8, and 9).

We cannot predict how many individuals will be killed or injured due to project-related access because of variables such as weather conditions, the nature and condition of roads, public use which may be confused with project use, and activity patterns of desert tortoises at the time the roads are in use; however, we expect this number to be small.

Effects of Loss of Habitat

The proposed project includes the installation of permanent desert tortoise exclusion fencing along the entire solar facility boundary (approximately 7.14 miles), utilizing gates and tortoise guards (with ramps) at project access locations. Approximately 2,153 acres of occupied desert tortoise habitat would be disturbed or unavailable to desert tortoises as a result of the proposed project (Table 7).

Table 7. Anticipated disturbance of desert tortoise habitat

Facility	Acreage (acres)		Length	Width (feet)
Facilities Within Perimeter Fence				
Solar Field and O&M Area	1,800			
Undeveloped area	approx. 200			
Subtotal		**2,000**		
Facilities Outside Perimeter Fence				
Firebreak	17.28		7.13 miles	20
Access (service) road from county ROW	22.86		7.86 miles	16-24
500 kV Transmission Line	100		4.66 miles	150
Crystal Substation Upgrades	0.92		200'	200
Water pipeline	3.03		1 mile	25
12kV Transmission Line to Travel Plaza	9.09		2.9 miles	25
Subtotal	153.1	**153.18**		
Project Facilities Total		**2,153.18**		

Project-related vehicles and equipment will operate only within the fenced boundary and access road within the utility corridor. Roads that are not designated as open by the Applicant and Tribe will not be used by project personnel unless accompanied by an authorized biologist.

Because recovery of vegetation in the desert can take decades or longer, we consider all ground-disturbing impacts associated with the proposed project to be long-term. Vasek *et al.* (1975) found that in the Mojave Desert transmission line construction and O&M activities resulted in a unvegetated maintenance road, enhanced vegetation along the road edge and between tower sites (often dominated by nonnative species), and reduced vegetation cover under the towers, which recovered significantly but not completely in about 33 years. Webb (2002) determined that absent active restoration following extensive disturbance and compaction in the Mojave Desert, soils in this environment could take between 92 and 124 years to recover. Other studies have shown that recovery of plant cover and biomass in the Mojave Desert could require 50 to 300 years in the absence of restoration efforts (Lovich and Bainbridge 1999). Based on a quantitative review of studies evaluating post-disturbance plant recovery and success in the Mojave and Sonoran deserts, Abella (2010) found that reestablishment of perennial shrub cover (to amounts found on undisturbed areas) generally occurs within 100 years but no fewer than 40 years in some situations. He also found that a number of variables likely affect vegetation recovery times, including but not limited to climate (e.g., precipitation and temperatures), invasion by nonnative plant species, and the magnitude and extent of ongoing disturbance.

If the facility is decommissioned instead of transferred to the Tribe at the end of the lease, the Applicant would implement restoration activities following such as decompacting soils, seeding, and nonnative species control.

Based on the work by Nussear *et al.* (2009), we calculated that approximately 3,462,505 acres or 67.8 percent of the 5,106,939 acres within the Northeastern Mojave Recovery Unit is considered habitat modeled at the 0.5 or greater "predicted habitat potential level" for desert tortoise (Don Harper, 2011, pers. comm.). The habitat that would be disturbed on a long-term basis (i.e., up to

2,153 acres) constitutes approximately 0.06 percent of the modeled habitat at the 0.5 level in the Northeastern Mojave Recovery Unit. While the model does not take into account anthropomorphic disturbances that have historically or are currently affecting the species, it is unlikely that consideration of these would result in a substantial change in this estimate.

While this percentage (0.06) does not constitute a numerically significant portion of the Northeastern Mojave Recovery Unit, we do not have the ability to place a numerical value on edge effects, habitat degradation, and overall fragmentation that the proposed action may cause or that occurs in the recovery unit as a whole. As a result, the low percentage of habitat within the recovery unit that would be lost underestimates impact of the proposed project on the desert tortoise, especially in light of existing land uses, changes in species composition and fire regimes due to establishment of nonnative plant species, existing and increasing disease and predation rates, and the expansion of human occupancy in what were once remote desert landscapes. The revised recovery plan (Service 2011a) and 5-year review (Service 2010) provide detailed discussions of these and other past, present, and future threats facing the desert tortoise.

Desert Tortoise Handling and Translocation Effects

In addition to construction and O&M-related activities, the primary effects of the proposed action on desert tortoises will result from capture and translocation of individuals prior to any ground disturbance associated with the project. Capture and translocation of desert tortoises may result in accidental death and injury from stress or disease transmission associated with handling tortoises; stress associated with moving individuals outside of their established home range; stress associated with artificially increasing the density of tortoises in an area and thereby increasing competition for resources; and disease transmission between and among translocated and resident desert tortoises. Capture and handling of translocated and resident desert tortoises for the purposes of conducting health assessments, which include visual inspection relative to body condition, clinical signs of disease, and collection of biological samples for disease screening (i.e., blood samples to test for antibodies to pathogens), could result in accidental death or injury.

Capturing, handling, and moving tortoises for the purposes of translocating them out of the project areas or out of harm's way may result in accidental death or injury if these methods are performed improperly, such as during extreme temperatures, or if individuals void their bladders and are not rehydrated. Averill-Murray (2002) determined desert tortoises that voided their bladders during handling had lower overall survival rates (0.81 to 0.88) than those that did not void (0.96). If multiple desert tortoises are handled by biologists without the use of appropriate protective measures and procedures, such as reused latex gloves, pathogens may be spread among individuals. The Applicant's translocation plan will include protocols to minimize translocation effects and would continue to be adaptively managed over time to facilitate successful translocation. Because the Applicant would employ desert tortoise biologists approved by the Service and adhere to the most recent Service guidance in addition to implementing the conservation measures outlined in the proposed action, we anticipate any mortality or injury to desert tortoises from activities associated with removing individuals from the proposed project sites is unlikely.

We anticipate that the Applicant will capture and translocate all subadult and adult desert tortoises from the fenced project areas and any portion of the action area where individuals may be in harm's way of project activities. Desert tortoises on the proposed solar facility site may be moved more than 1,640 feet which may be outside of their existing home ranges to the approved recipient areas. Desert tortoises that are found on the BLM corridor, in harm's way on access roads, or other situations where they may be moved less than 1,640 feet will not be translocated in accordance with the translocation plan, these tortoises will be moved the minimal distance from harm's way to secure habitat. Based on the survey results for the proposed solar site, we estimate 51 to 103 subadult and adult desert tortoises, and 20 to 83 juvenile desert tortoises will require capture and movement from harm's way as a result of construction of the solar facility; we estimate that reproductive females may produce 224 to 439 eggs per year.

Because of the difficulty in locating juvenile desert tortoises and eggs, some but not all are likely to be translocated from the project areas. Effects to juvenile desert tortoises and eggs that are undetected on the project sites are discussed later in this section. Translocation has the potential to increase the prevalence of diseases, such as URDT, in translocated and resident desert tortoises. Physiological stresses associated with handling and movement or from density-dependent effects could exacerbate this risk if translocated individuals with subclinical URTD or other diseases that present symptoms subsequent to translocation. This potential conversion of translocated desert tortoises from a non-contagious to contagious state may increase the potential for infection in the resident population above pre-translocation levels. To minimize this risk, health assessments would be conducted on all desert tortoises to be translocated prior to being released in accordance with the most recent Service guidance (Service 2011b).

Translocated desert tortoises will not be released into the recipient areas until results of the disease tests have been received and the Service approves the disposition plan for each individual. While awaiting test results, desert tortoises will be monitored *in-situ* or penned (i.e., quarantined) on site, no longer than 18 months. Handling and blood collection may result in elevated stress levels that render individuals more susceptible to disease or dehydration from loss of fluids. Because the Applicant will employ experienced biologists, approved by the Service and trained to perform health assessments and collection of biological samples, we do not expect these activities to result in death or injury of any individuals. Furthermore, disease screening and quarantine procedures will reduce the potential for introduction and spread of disease due to translocation.

Desert tortoises in quarantine pens could increase their exposure and vulnerability to stress, dehydration, and inadequate food resources. However, because desert tortoises will be monitored regularly, care will be administered following specific procedures, and the quarantine period will not exceed 18 months, we anticipate that quarantined individuals are unlikely to experience death or injury from the vulnerabilities identified above. The potential exists, however, for predators or poachers to target quarantined desert tortoises. This risk also is expected to be minimized through regularly scheduled monitoring in accordance with the desert tortoise translocation plan. Desert tortoises monitored *in-situ* may be subject to similar effects as those in quarantine pens; however, because these individuals will be confined to large areas

within their existing home ranges, we anticipate that the potential for increased stressors would be relatively low and adequate shelter and food resources would be accessible until translocation. While we cannot reasonably predict if an increase in disease prevalence within the resident population may occur due to translocation, we believe the following measure will reduce the magnitude of this risk:

- The Applicant would use experienced biologists and approved handling techniques that are unlikely to result in substantially elevated stress levels in translocated animals;
- density-dependent stresses are unlikely to occur for reasons stated below;
- any animal that has clinical signs of disease or ELISA-positive blood test would not be translocated; and
- long-term monitoring of translocated individuals would be implemented to determine the prevalence of disease transmission.

Because ELISA testing can yield false-positive results (i.e., an animal may test positive even though it is not a carrier of the disease), the removal of healthy individuals from the translocated population may occur due to concern over disease. These individuals would be removed from the wild and, thereby, no longer contribute to the environmental baseline for the action area. Removing these individuals may inadvertently reduce the resistance of the population to disease outbreaks. Because the Applicant would coordinate with the Service and follow-up testing of ELISA-positive individuals would be performed, the potential for removing false-positive individuals from the translocated population is low. Consequently, we conclude that few, if any, desert tortoises would be removed from the population due to false-positive results. Similarly, some of the animals that test positive may have survived past disease infections and remain healthy. Despite gaps in our knowledge relative to disease pathology and recognition that removal of seropositive desert tortoises may eliminate individuals with superior fitness and genetic adaptations for surviving disease from the gene pool, the low number of individuals expected to be removed would not be large enough to affect population genetics in the wild.

Apart from disease, translocation also affects resident desert tortoises within the maximum dispersal area due to local increases in population densities. Desert tortoises from the solar facility site would be moved to areas now supporting a resident population, which may result in increased inter-specific encounters and, thereby, an increased potential for spread of disease, potentially reducing the health of the overall population; increased competition for shelter sites and other limited resources; increased competition for forage, especially during drought years; and increased incidence of aggressive interactions between individuals (Saethre *et al.* 2003). To minimize potential density-dependent effects, recipient areas must be sufficiently large to accommodate and maintain the resident and translocated desert tortoises (Service 2011b). Translocation of 103 tortoises into the 41.2 miles^2 proposed as the maximum dispersal area associated with the primary recipient area would increase the density by 2.5 tortoises per mile^2. Based on the estimate of 8.3 desert tortoises per mile^2 in the Northeastern Mojave Recovery Unit and the maximum dispersal area as defined by physical barriers to movement and our expectation

that tortoises may move up to 4 miles following release, we calculated the maximum allowable final density (i.e., residents plus translocatees) at the recipient area should not exceed 10.8 tortoises/mile^2).

Should the density of resident desert tortoises at the recipient areas or the number of desert tortoises to be translocated be higher than estimated, the size of the recipient areas may need to be expanded to ensure the final density following translocation stays within the allowable threshold. We anticipate that density-dependent effects on resident desert tortoise populations are likely to be minor for the following reasons:

- Health assessments will be performed on all desert tortoises prior to translocation thus decreasing the potential for introduction of infectious diseases to the recipient area;
- a threshold density has been calculated for the recipient areas so as not to exceed 130 percent of the mean density for the recipient area. This threshold is significantly lower than that which adverse effects were observed in previous post-translocation studies (Saethre *et al.* 2003);
- translocation will be implemented such that individuals are distributed throughout the area;
- the recipient areas are contiguous with suitable desert tortoise habitats, which will facilitate dispersal into other areas; and
- long-term monitoring will provide opportunities to implement adaptive management to address any observed unanticipated effects.

After verification of density estimates, receipt of disease screening results, and approval of disposition plans, the Applicant will translocate all desert tortoises to the respective recipient area including adjacent habitat as appropriate. Following release, desert tortoises are expected to disperse, but we cannot predict the movement patterns that all translocated individuals are likely to exhibit. Dispersal distances following translocation appear to be influenced by several variables including the distance they are moved from their home range and the availability of resources in the area to which they are moved. Desert tortoises translocated relatively short distances (i.e., less than 1,640 ft) from their home ranges tend to move shorter distances from their release points than desert tortoises translocated more than 1,640 feet. Nussear (2004) reported that for adult desert tortoises translocated greater than 1,640 feet, the mean straight-line dispersal distance for both males and females ranged from 0.6 to 3.7 miles. Walde *et al.* (2008) reported that the mean straight-line dispersal distances for adult desert tortoises using two experimental treatments was approximately 1.6 miles and 2.6 miles for males and 0.9 mile and 1.4 miles for females. Maximum straight-line dispersal distances for translocated adult males ranged from 3.9 miles (Field *et al.* 2007) to 7.8 miles in the first year following translocation (Walde *et al.* 2008).

The degree to which translocated desert tortoises expand the area they use depends on whether tortoises are released into typical or atypical habitat; that is, if the recipient area supports habitat that is similar to that of the source area, desert tortoises are likely to move less (Nussear 2004).

Translocated desert tortoises appear to reduce movement distances following their first post-translocation hibernation to a level that is not significantly different from resident populations (Field *et al.* 2007; Nussear 2004). As time increases from the date of translocation, most desert tortoises alter their movement patterns from dispersed, random patterns to more constrained patterns, which may indicate establishment of a new home range (Nussear 2004).
Just as we cannot predict the distances translocated desert tortoises will move, we also cannot predict the direction these individuals are likely to move. Berry (1986) observed that translocated desert tortoises have exhibited a tendency to orient toward the location of their capture and attempt to move in that direction, but other research showed no discernible homing tendency in translocation individuals (Field *et al.* 2007). Data specific to short-distance translocations indicate that at least some individuals will attempt to return to their former home ranges after release (Stitt *et al.* 2003, Rakestraw 1997).

Previous translocation studies generally have shown that straight-line dispersal distances from release points vary during the first year following translocation. While the mean straight-line distances reported for several studies are close to or less than 1.6 miles, some translocated desert tortoises move much farther (Drake *et al.* 2009, Field *et al.* 2007, and Nussear 2004). Based on our analysis of the available data, we expect the movements of most tortoises translocated more than 1,640 feet to remain within 4.0 miles of their release points. This distance was derived by examining the upper limits of the 95 percent confidence intervals for available data. However, as mentioned above, translocated individuals also significantly expand the area they occupy in the first year following translocation (e.g., 3.9 to 6.9 miles^2 at a Nevada site and from 0.2 to 10.3 miles^2 at a Utah site). The distance of 4 miles was chosen to define the maximum anticipated dispersal area for recipient areas.

In one study, the majority of dispersal movement away from the release site occurred during the first 2 weeks after translocation (Field *et al.* 2007). During this time and over the period prior to establishment of a new home range, translocated desert tortoises may experience higher potential for mortality because they are moving through unfamiliar habitats and are less likely to have established cover sites that provide protection. Studies have documented various sources of mortality for translocated individuals, including predation, exposure, fire, disease, and flooding (Nussear 2004; Field *et al.* 2007; Berry 1986; U.S. Army 2009, 2010). Of these, mammal predation appeared to be the primary source of mortality in most translocation studies (Nussear 2004; Field *et al.* 2007; U.S. Army 2009, 2010).

Various studies have documented mortality rates of 0, 15, 21, and 21.4 percent of translocated desert tortoises in other areas (Nussear 2004, Field *et al.* 2007). Nussear (2004) found that mortality rates among translocated desert tortoises were not statistically different from that observed in resident populations. However, this study did not compare mortality rates in resident populations to those in control groups; therefore, we cannot determine if the translocation caused increased mortality rates in the resident population. Recent studies in support of the Fort Irwin expansion (U.S. Army 2009 and 2010) compared mortality rates associated with resident and translocated desert tortoise populations with that of control populations; preliminary results indicated translocation did not increase mortality above natural levels (Esque *et al.* 2010). This and other fieldwork indicate that desert tortoise mortality is most likely to occur during the first

year after release. After the first year, translocated individuals are likely to establish new home ranges and mortality is likely to decrease.

Juvenile desert tortoises will comprise a portion of the overall mortality predicted within resident and translocated populations. In general, this life stage experiences higher mortality rates than subadults and adults under natural circumstances and are more susceptible to predation. We estimate that the Applicant will locate and move half of the 20 to 83 juvenile desert tortoises on the proposed solar site. Because of the difficulty in locating juvenile desert tortoises, individuals that are not translocated are likely to die during construction. However, as stated above for direct effects from construction and O&M, based on the estimated desert tortoises expected to occur within the action area and the conservation measures that have been identified for each project component, we conclude that death and injury resulting from translocation of juvenile desert tortoises will not appreciably reduce the desert tortoise population or reproductive success within the Northeastern Mojave Recovery Unit.

Based on the available data on translocation and consistent with the findings in Esque *et al.* (2010), we conclude that mortality rates in the resident and translocated populations are unlikely to be elevated above levels that these populations would experience in the absence of translocation. Therefore, we anticipate that death or injury of few, if any, subadults, adults, juveniles, or eggs will be the direct result of translocation. The monitoring of the translocated, resident, and control populations will assist us in determining if this conclusion is accurate. One shortcoming of the proposed monitoring program is that, while it considers observations of a control population that will not be affected in any manner by the translocation, it does not establish mortality thresholds or adaptive management measures in the event that significant differences in mortality rates are observed among the populations that can be attributed to the translocation. Therefore, we cannot analyze the adaptive management component of the translocation plan or its effectiveness in addressing elevated mortality rates.

In conclusion, we do not anticipate that moving desert tortoises out of harm's way would result in death or injury because these individuals would remain near or within their existing home range, which is not likely to result in significant social or competitive impacts to resident desert tortoises in the area. Following release of desert tortoises translocated outside of their home range, a small number may die due to exposure, stress, dehydration, inadequate food resources, and increased predation. We anticipate most of this mortality is likely to occur in the first year after release, during the period that translocated animals are attempting to establish new home ranges. In addition, we anticipate that a small number of resident desert tortoises at the recipient area may die from natural causes due to these same vulnerabilities. However, we cannot determine if mortality rates in the translocated or resident populations would be above natural mortality levels for the recipient area. In addition, the potential impacts of capturing, handling, and moving tortoises for the purposes of translocation would be avoided or reduced through implementation of the actions specified in the "Conservation Measures" section which includes implementation of the Service-approved translocations plan (Appendix A). Lastly, as described in the translocation plan, translocated desert tortoises will be monitored, findings reported to the Service, and adaptive management strategies implemented, as needed.

Post-Translocation Monitoring

Based on the description of post-translocation monitoring in the translocation plan (Appendix A) and our estimate of the number of desert tortoises that require translocation, we anticipate that the Applicant will attach transmitters to no more than 143 subadult and/or adult desert tortoises (i.e., 103 translocated, 20 resident, and 20 control animals) to facilitate monitoring. Thus, desert tortoises will have transmitters attached and be monitored and handled periodically for visual health assessments throughout the monitoring period. Some potential exists that handling of desert tortoises may cause elevated levels of stress that may render these animals more susceptible to disease or dehydration from loss of fluids. However, because the Applicant will employ experienced biologists approved by the Service, we do not expect handling and monitoring activities to result in death or injury of any individuals.

Indirect Effects

Indirect effects of the proposed project also result in death or injury to desert tortoises. Some of these effects include increased predation by common ravens, loss or fragmentation of habitat linkages important to maintaining population and genetic connectivity, degradation of habitat and the diet of desert tortoises from the spread of nonnative plant species, and noise and lighting from project construction and operations.

Predator Subsidies

Common ravens and coyotes are attracted to human activities in the desert because food and water subsidies, and roosting and nesting substrates that would otherwise be unavailable. Human activities also facilitate expansion of raven and coyote populations into areas where they were previously absent or in low abundance. Ravens likely will frequent the project areas because of the potential availability of such subsidies. Aside from the Tribal community, no other human communities occur in the action area. Road-kill of wildlife along I-15 provides additional attractants and subsidies for opportunistic predators and scavengers; road-kill is not likely to increase appreciably as a result of the project as I-15 is a heavily traveled highway.

Facility infrastructure, such as power poles, fences, buildings, and other structures on the project site, may provide perching, roosting, and nesting opportunities for ravens and other avian predators. Natural predation rates may be altered or increased when natural habitats are disturbed or modified. As stated above, common raven populations in some areas of the Mojave Desert have increased 1,500 percent from 1968 to 1988 in response to expanding human use of the desert (Boarman 2002). Since ravens were scarce in the Mojave Desert prior to 1940, the existing level of raven predation on juvenile desert tortoises is considered an unnatural occurrence (BLM 1990). In addition to ravens, feral dogs have emerged as significant predators of desert tortoises adjacent to residential areas. Though feral dogs may range several miles into the desert and have been found digging up and killing tortoises (Evans 2001), we are not aware of any reports of feral dogs in the project area.

To avoid and minimize the availability of project sources for predator, subsidies will be minimized by Conservation Measure 14 which proposes monitoring for the presence of ravens and other predators. A predator-control plan will be implemented if predator densities substantially increase in the vicinity of the facility. Specific minimization actions to be implemented include onsite trash management, elimination of available water sources, designing structures to discourage potential nest sites, use of hazing to discourage raven presence, and active monitoring of the site for presence of ravens.

Nonnative Plant Species

Another indirect effect from the development of the proposed project is the potential introduction and spread of nonnative, potentially invasive plant species into habitats adjacent to the project sites. Construction and O&M activities of the proposed project components may increase distribution and abundance of nonnative species within the action area due to ground-disturbing activities that favor these species. Project equipment may transport nonnative propagules into the project area where they may become established and proliferate. In addition, the introduction of nonnative plant species may lead to increased wildfire risk, which ultimately may result in future habitat losses (Brooks *et al.* 2003) and changes in forage opportunities for desert tortoises.

The Applicant proposed conservation measures as part of the proposed action to address the potential effects from nonnative plant species. Conservation Measure 4 includes controls at entry locations to facilitate weed management and invasive species control from offsite sources. Trucks and other large equipment would be randomly checked before entering the site for any invasive species debris or seed. Conservation Measure 15 describes a Weed Management Plan, which will be approved by the Service, BIA, BLM, and the Tribe which will be implemented prior to the initiation of ground-disturbing activities. Measures in the Weed Management Plan include: worker awareness training; limiting ground disturbance to designated areas only; maintenance of vehicle wash and inspection stations and close monitoring of materials brought onto the site to minimize the potential for weed introduction; reestablishment of native vegetation in disturbed areas to prevent weeds from colonizing newly disturbed areas; and, regularly scheduled monitoring to quickly detect new infestations of weeds, coupled with rapid implementation of control measures to prevent further infiltration.

While we cannot reasonably predict the increase in nonnative species abundance that this project may cause within the action area, the degradation of habitat due to spread of nonnative plants would be minimized through the measures outlined above and in the Weed Management Plan.

Edge Effects

Increased noise levels and the presence of full-time facility lighting may affect desert tortoise behavior during construction and operations of the facility over a 30-year period. While limited data exist on the effect of noise on desert tortoises, Bowles *et al.* (1999) demonstrated that the species has relatively sensitive hearing (i.e., mean = 34 dB SPL), but few physiological effects were observed with short-term exposures to jet aircraft noise and sonic booms. These results cannot be extrapolated to chronic exposures over the lifetime of an individual or a population.

We also do not have sufficient data documenting the effects of artificial lighting on desert tortoise behavior and therefore cannot reasonably predict the magnitude of effect either noise or light will have on adjacent desert tortoise populations. Based on the ability of other species to adapt to noise disturbance, noise attenuation as distance from the project increases, and the fact that desert tortoises do not rely on auditory cues for their survival, we do not expect any desert tortoises to be injured or killed as a result of project-related noise impacts. In addition, the Applicant has included measures as part of the proposed action to minimize noise and light-related impacts to the species (Conservation Measure 13).

Because few data exist relative to edge effects from noise, light, vibration, and increased dust from construction and O&M activities, we cannot determine how these potential impacts may affect desert tortoise populations adjacent to the development sites. The lack of information is especially relevant when evaluating effects to individuals within the habitat linkage that would be impacted by the proposed project. Thus, the magnitude and extent of these edge effects cannot be articulated at this time, but conceivably could disturb individual desert tortoises to the extent that they abandon all or a portion of their established home ranges and move elsewhere.

Effects on Population Connectivity

Landscape genetic analysis performed by Latch et al. (2011) identified both natural (slope) and anthropogenic (roads) landscape variables that significantly influenced desert tortoise gene flow of a local population. Although they found a higher correlation of genetic distance with slope compared to roads, desert tortoise pairs from the same side of a road exhibited significantly less genetic differentiation than tortoise pairs from opposite sides of a road. Project access roads are not anticipated to decrease population connectivity substantially beyond the existing conditions.

As discussed in the revised recovery plan (Service 2011a) and elsewhere, habitat linkages are essential to maintaining rangewide genetic variation (Edwards *et al.* 2004b, Segelbacher *et al.* 2010) and the ability to shift distribution in response to environmental stochasticity, such as climate change (Ricketts 2000, Fischer and Lindenmayer 2007, EPA 2009). Natural and anthropomorphic constrictions (e.g., I-15) can limit gene flow and the ability of desert tortoises to move between larger blocks of suitable habitat and populations. In the action area, existing anthropomorphic constrictions compound effects of natural barriers on desert tortoise population connectivity.

The proposed solar facility would be constructed on a mesa at the north end of Dry Lake Valley with existing natural barriers to tortoise movement resulting in a somewhat isolated population. The western boundary of Dry Lake Valley is defined by the Arrow Canyon Range. The Dry Lake Range forms the southern boundary and the North Muddy Mountains are the eastern boundary.

The most obvious potential desert tortoise movement corridor is along or adjacent to the railroad levee; however two major drainages occur, one north and one south of the site which could restrict tortoise movement. The frequent railroad traffic and noise from I-15 could limit use of this corridor. The other three sides of the mesa are rather steep with deep gullies or incised edges which also restrict tortoise movement across the mesa and promote movement around the mesa.

Potential movement of desert tortoises south of the action area is restricted by U.S. 93, the Las Vegas and Arrow Canyon ranges to the west, and I-15 and a railroad to the east. The area north of the action area is characterized as major east-west drainages, steep and rugged slopes, and mesas. Tortoise movement north of the action area (i.e., north of the translocation area) would be hindered by the steep topography. We do not anticipate that the proposed action would affect potential movement of tortoises north of the action area, within either the Mormon Mesa or Beaver Dam conservation habitat units.

In consideration of the environmental setting described above, we anticipate that opportunities for desert tortoise connectivity would not be significantly modified if the proposed project were constructed.

Effects of Compensation and Land Conservation (Recipient Area)

To offset the permanent loss of tortoise habitat, the Applicant will provide habitat compensation to the Tribe as described in Conservation Measure 9. The Service, Tribe, and BIA, as appropriate, will reach mutual agreement on the expenditure of these funds. The Tribe will provide additional conservation by ensuring that the 6,000 acres (recipient area) that receive displaced tortoises from the solar facility will be protected from development and other threats during the term of the lease. Funds may be used to (1) designate a 6,000-acre desert tortoise conservation area in perpetuity, manage the site for tortoise conservation in accordance with the Service-approved management plan, and long-term tortoise monitoring , or (2) designate a 6,000-acre desert tortoise conservation area for the term of the lease with the Applicant, funding for habitat improvement projects such as improved forage, road closures and rehabilitation, removal or control of non-native plants, involvement of Tribal members in conservation efforts, and data collection from translocated tortoises to understand tortoise behavior including response to translocation as a result of the project.

Although the compensation and protection of desert tortoise habitat would not create new habitat within the recovery unit, it would provide a funding source to improve the status and our knowledge of desert tortoises on the Reservation and establish land to be managed for the conservation of the species. Costs associated with project construction monitoring, survey and removal of tortoises and their disposition (e.g., translocation, care at an onsite facility) are in addition to the remuneration fees and the responsibility of the Applicant.

Effectiveness of Conservation Measures at Minimizing Potential Effects to Desert Tortoises

Conservation Measure 1: Establish sediment control devices and implement BMPs.

Sediment controls will allow existing water flow patterns to remain and maintain natural sediment transport and flow speeds through and off the site. Silt fence or hay bales will be placed around stock piles to prevent erosion during rain events. Slopes and ravine edges susceptible to sheet flow will be protected by installing control measures such as silt fence, hay bales or gravel bags. Stabilize non-active areas as soon as practicable after construction and no later than 14 days after activity on that portion of the site has temporarily or permanently ceased.

Place covers over stockpiled dirt prior to storm or high wind events. Gabions will be constructed and placed within drainages at engineered locations to minimize flow velocity and sediment transport downstream. Construction will be planned so that vegetation is left undisturbed until immediately prior to grading. Sediment control measures would minimize erosion and habitat degradation.

The proposed BMPs that minimize potential effects to the desert tortoise and its habitat are taken from the draft environmental impact statement (ARCADIS 2011b) and discussed below.

- Preserve existing vegetation, as much as practicable, and conduct clearing and grading only in areas necessary for project activities.
- Prevent vehicles and personnel from straying onto adjacent lands and off-site habitat by placing temporary road markers and designating turnaround areas for vehicles. These measures may reduce habitat disturbance and the occurrence and spread of weeds onsite and in adjacent habitat.

Conservation Measure 2: Worker environmental awareness program (WEAP).

The WEAP will be administered to all onsite personnel prior to starting work on the project. The WEAP would enhance the effectiveness of onsite personnel to improve detection and avoidance of desert tortoises, provide instruction to workers if a tortoise is observed, and ensure compliance with the measures in this biological opinion during construction and O&M activities. The record of participants in the WEAP will provide a means to ensure that all workers have been trained.

Conservation Measures 3, 9, and 11: Monitor construction activities.

Authorized desert tortoise biologists and monitors will be provided and responsible for ensuring that all measures in this biological opinion are properly implemented including: reporting all non-compliance issues; all tortoises found in harm's way will be moved to safe areas and reported; project vehicles and equipment activity remain in designated areas; and minimizing the risk to tortoises on project access roads. This measure would reduce the risk to desert tortoises that were not found during clearance surveys or enter project areas from adjacent habitat.

Conservation Measures 4 and 15: Weed-control.

Introduction of weeds and invasive species into project and surrounding areas will be controlled using a weed management plan including management and operational measures to avoid the introduction or spread of invasive non-native species in the action area.

Conservation Measures 5 and 6: Desert tortoise translocation and health assessments; and Conservation Measures 7 and 8: Install tortoise exclusionary fencing and remove tortoises.

Prior to construction, the solar facility boundary would be permanently fenced with desert tortoise exclusion fencing. Surveys will be conducted prior to habitat disturbance for each phase to locate all desert tortoises within the solar facility site. Tortoises located would be handled by

authorized desert tortoise biologists in accordance with Service (2009) protocols and translocated to designated areas. The health status of all tortoises proposed for translocation will be evaluated to minimize the potential spread of disease. The goal of these measures is to ensure that all tortoises are moved from harm's way into suitable habitat; are healthy; and monitored to ensure that they adjust to their new environment. The translocation plan describes in detail the specific procedures that will be implemented to achieve this goal.

The fence would prevent tortoises from entering the project site during construction and O&M activities, including tortoises displaced from the project site. Monitoring fence construction would minimize impacts to tortoises that may occur along the fenceline.

Conservation Measure 10: Fees.

The Applicant will pay remuneration fees based on acres of anticipated disturbance to the Tribe (2,141 acres) and BLM (12 acres). The fees provided to the Tribe will be used for tortoise conservation which may include establishing a 6,000-acre desert tortoise conservation area (final recipient area), monitoring of displaced tortoises to increase our knowledge of disease and translocation effects; improving habitat by removing or controlling non-native plants and increasing important forage species for the tortoise; minimizing, controlling, or eliminating desert tortoise threats; fencing the final boundary of the conserved recipient area; and other actions in consultation with the Service. BLM actions may involve habitat acquisition, population or habitat enhancement, increasing knowledge of the species biological requirements, reducing loss of individual animals, documenting the species' current status and trends, and preserving distinct population attributes.

Conservation Measure 12: Speed limits.

The proposed speed limit for vehicles and equipment would allow operators more time to see a desert tortoise in their path or harm's way. Low speeds increase the ability of operators to see tortoises in the path of their vehicle or equipment thus avoiding collision with the tortoise.

Conservation Measure 13: Lighting.

The effects of artificial lighting on desert tortoises are not well known. Potential lighting effects would be minimized by focusing lighting toward the solar facility and downward to avoid lighting areas beyond the project perimeter.

Conservation Measure 14: Ravens and other subsidized tortoise predators.

The presence of ravens and other potential human subsidized predators will be monitored and controlled if predator densities substantially increase in the vicinity of the facility. Attraction of ravens and other subsidized predators will be minimized by onsite trash management, elimination of available water sources, designing structures to discourage potential nest sites, and use of hazing.

Conservation Measure 16: Salvage cacti and yuccas; Conservation Measure 18: Restore temporary disturbances; and Conservation Measure 20: Avoid perennial vegetation.

Cacti and yuccas that cannot be avoided during construction for the up to 500kV transmission line will be salvaged and used to restore temporary disturbances, particularly along the linear project areas. Restoration of disturbances will minimize the habitat loss and minimize spread of non-native plants on the ROW. Where feasible, perennial vegetation will be avoided, thus reducing the loss of shelter and cover habitat for desert tortoises in the action area. *Conservation Measure 17: Mark work areas and locate staging activities in previously-disturbed areas; and Conservation Measure 19: Locate power transmission towers and associated spur roads to avoid tortoise burrows.*

Visibly delineating works areas would inform workers where they may conduct activities and minimize the potential egress of activity beyond these areas. The extent of habitat disturbed would be minimized by using previously-disturbed areas where feasible. Siting power transmission towers and associated spur roads to avoid tortoise burrows would minimize the loss of shelter habitat (burrows) and stress to tortoise that use those burrows, and may minimize the number of tortoises that require relocation.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, and Federal regulation pursuant to section 4(d) of the Act, prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined as intentional or negligent actions that create the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below for desert tortoises are non-discretionary and must be undertaken by the BIA and BLM so that they become binding conditions of any grant or permit issued to the applicants/permittees, as appropriate, for the exemption in section 7(o)(2) to apply. The BIA and BLM have a continuing duty to regulate the activity covered by this incidental take statement. If the BIA or BLM: 1) fail to assume and implement the terms and conditions; or 2) fail to require the Applicant to adhere to the terms and conditions of the incidental take statement through enforceable stipulations that are incorporated into the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the BIA and

BLM must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR § 402.14(i)(3)].

A. Amount and Extent of Take

1. Moapa Dace

The Service anticipates that incidental take of Moapa dace through harm (i.e., habitat modification or degradation that results in death or injury) will occur, but the actual death or injury of fish will be difficult to detect for the following reasons: the species has a small body size and finding a dead or impaired specimen is unlikely in a flowing stream environment. On the other hand, significant habitat modification or degradation that could result in take of Moapa dace will be detectable and measurable. Therefore, we are expressing take of Moapa dace in terms of habitat loss resulting from changes in habitat characteristics, such as water temperature or chemistry and water flows. Although the extent of effects to the species as a result of the proposed action is not yet known, future and on-going biological/hydrological studies will assist us in determining how flow reductions and thermal load losses will affect Moapa dace habitat, food availability, reproduction, and fecundity.

Perhaps the most significant impact to Moapa dace habitat that could result from implementation of the proposed action, as a result of decreased discharge and subsequent wetted area, is the reduction of overall volume of water that would be available to the species within the channel, thereby limiting the chance for long-term survival. Larger water volumes provide the habitat necessary for increased food production and subsequently larger fish, thus greater fecundity. Hence, more numerous, larger eggs provide a better opportunity for species long-term survival.

We have estimated that withdrawal of 72 afy of groundwater for the proposed project will contribute to the incidental take of Moapa dace by potentially reducing riffle and pool habitat. However, habitat loss and associated incidental take of Moapa dace specific to the proposed solar project is difficult to separate from the other parties simultaneously withdrawing groundwater from different locations within the same carbonate aquifer. Given this, the most accurate way to establish habitat loss and associated incidental take of Moapa dace is by evaluating the impacts to Moapa dace habitat on a landscape level, as was done in the PBO. In that parent document, the cumulative withdrawal of 16,100 afy by the parties associated with the MOA predicted a loss of approximately 22 percent riffle and 16 percent pool habitat (as measured at the Warm Springs West gage downstream from the Pedersen Unit) when the flows reach 2.78 cfs. Therefore, while incidental take is not authorized under the PBO but deferred to project-specific (tiered) opinions, the total amount of incidental take of Moapa dace anticipated for the cumulative actions of parties to the MOA is that which is associated with 22 percent loss in riffle habitat and 16 percent loss in pool habitat. Should flows at the Warm Springs West gage decline to a flow below 2.78 cfs, the amount of incidental take for any project-specific action under the MOA would be exceeded for the Moapa dace.

2. Desert Tortoise

The proposed action will result in take of all desert tortoises that occur within the fenced perimeter of the proposed solar facility and in harm's way within the firebreak, project roads; and areas where tortoise exclusion fencing would be installed. Table 8 identifies the incidental take threshold for all age classes of desert tortoises during construction activities. Desert tortoises that are residents within the recipient and control areas may be taken as a result of translocation of displaced tortoises from the solar facility site and proposed health assessments and monitoring. Additional desert tortoises in the action area, including buffer areas, may be affected by the project to the extent that incidental take may occur; however, such effects are anticipated to be minor and involve mostly alteration in feeding, sheltering, and reproduction behavior due to reduction or fragmentation of their home ranges.

We acknowledge that we cannot precisely quantify the amount of take that will occur during all project activities. Some of the constraints that make it difficult to determine desert tortoise densities and abundance include the cryptic nature of the species (i.e., individuals spend much of their lives underground or concealed under shrubs), inactivity in years of low rainfall, and low abundance across a broad distribution within several different habitat types. In addition, population numbers and distribution of individuals fluctuate in response to weather patterns and other biotic and abiotic factors over time. The number of juvenile desert tortoises and eggs is even more difficult to quantify because of small size, their location underground, and low detection probabilities during surveys. The following paragraphs define the form of take and the number of individuals we anticipate will be taken by project activities.

a. Areas Associated with Construction and O&M Activities

All desert tortoises and most nests with eggs within the proposed fence perimeter for the solar facility will be taken as result of the project. The actual number of individuals missed during clearance surveys and killed during construction is unknown. We expect most tortoises missed would be hatchlings and juveniles. Locating the carcasses of small tortoises or egg fragments is unlikely. To address this issue, we have used the threshold for capture of subadult and adult individuals (i.e., up to 103 tortoises) on the proposed project sites as a surrogate measure of mortality of the smaller size classes and eggs. Using this threshold as a surrogate assumes that our method of calculating the number of reproductive females, which is based on the estimated abundance of subadult and adult desert tortoises on the proposed project sites, allows us to also calculate the number of juveniles and eggs that may be affected. Consequently, finding more than 103 subadult and adult desert tortoises on the solar facility site would indicate that a larger number of juveniles and eggs may be killed or destroyed during construction.

Based on the measures proposed by BIA, desert tortoise survey data, and the proposed action, we anticipate that up to 103 adult and sub-adult and 83 juvenile tortoises will be captured within the fence perimeter for the solar facility and translocated; and up to 3 adult or sub-adult desert tortoises may be incidentally killed or injured. As discussed above, an unknown number of hatchlings and juveniles will be killed or injured, and an unknown number of tortoise eggs will be destroyed as a result of the project.

We do not know how many desert tortoises will be encountered in harm's way outside the fenced solar site; however, *take* in the form of capture and relocation or translocation of all desert tortoises resulting from these incidental detections is exempted to ensure mortality and injury of desert tortoises is minimized. Based on the survey data and tortoise encounters of similar projects, we estimate that 16 desert tortoises may occur in harm's way outside the fenced solar facility and no more than one subadult or adult desert tortoise and two hatchling or juvenile tortoises would be killed or injured.

O&M activities may result in incidental take, in the form of mortality or injury, of no more than two subadult or adult desert tortoise and two hatchling or juvenile desert tortoises but not to exceed more than one per calendar year during the life of the project for each of the two size groups; no eggs should be taken (Table 8).

Table 8. Desert Tortoise Incidental Take Thresholds

Type of take	Within fenced perimeter and fenceline	Outside fenced perimeter during construction	O&M activities
Death or injury- subadults & adults	3	1	2[2]
Death or injury- hatchlings & juveniles	unknown[1]	2	2[2]
Capture- subadults & adults	103	all in harm's way; estimate = 16	all in harm's way
Capture- hatchling & juveniles	83	all in harm's way	all in harm's way
Eggs destroyed	unknown[1]	0	0

[1]Take threshold determined by the number of subadults and adults

[2]Not to exceed one per calendar year or five during the life of the project

The disturbance of up to 2,153 acres of habitat from construction of the proposed solar project including transmission lines, pipeline, and road construction or upgrade activities may result in harm to desert tortoises that use this area as part of their home range. If the proposed project-related activities result in impacts to desert tortoise habitat beyond this acreage, the amount or extent of take will be exceeded.

b. Areas Associated with Translocation

Take, in the form of capture would occur affecting up to 103 desert tortoises in harm's way and 40 resident desert tortoises in support of translocation activities at recipient and control areas. We anticipate that health assessments, including collection of biological samples, and attaching transmitters would be performed on all of these individuals. Although the release of up to 103 adult and subadult tortoise and 42 (half of the maximum estimate of 83) into recipient areas may disrupt normal behaviors of resident tortoises, we do not believe this level of disruption will result in incidental take of more than a few individuals.

We do not anticipate that the collection of blood samples will result in the death or injury of any individuals because Service-approved authorized desert tortoise biologists will perform health assessments in accordance with the most recent Service guidance (Service 2011b).

The post-translocation monitoring program will include attaching transmitters and conducting periodic health assessments. Although transmittered desert tortoises may be captured multiple times over the course of the post-translocation monitoring period, we do not anticipate that any tortoises will be directly killed or injured due to post-translocation monitoring activities.

B. EFFECT OF TAKE

In the accompanying biological opinion, the Service determined that these levels of anticipated take associated with this project alone are not likely to jeopardize the continued existence or adversely affect the recovery of the Moapa dace or desert tortoise. No designated critical habitat would be affected by the proposed action.

C. REASONABLE AND PRUDENT MEASURES (RPMS) WITH TERMS AND CONDITIONS

The BIA, BLM, Tribe, and Applicant will implement numerous conservation measures as part of the proposed action to minimize the incidental take of desert tortoises. Our evaluation of the proposed action is based on the assumption that the actions as set forth in the "Conservation Measures" section of this biological opinion will be implemented. Any proposed changes to the conservation measures or in the conditions under which project activities were evaluated may constitute a modification of the proposed action. If this modification causes an effect to desert tortoises that was not considered in the biological opinion, reinitiation of formal consultation pursuant to the implementing regulations of section 7(a)(2) of the Act (50 CFR § 402.16) may be warranted. The following RPMs supplement and clarify conservation measures included as part of the proposed action. The RPMs are necessary and appropriate to minimize the impact of take on desert tortoises.

To be exempt from the prohibitions of section 9 of the Act, the BIA, BLM, Tribe and Applicant, including all agents and/or contractors, must comply with the following terms and conditions, which implement the reasonable and prudent measures described above, and are intended to minimize the impact of incidental take on the Moapa dace and desert tortoise. These terms and conditions are non-discretionary.

1. Moapa Dace

RPM 1: *The BIA shall ensure that measures are implemented to minimize potential impacts to Moapa dace that may result from groundwater pumping associated with construction and O&M of the proposed solar project.*

Term and Condition:

The BIA and Tribe shall implement all conservation measures outlined in the Muddy River MOA that are specific to the project applicant, as well as those measures to be carried out in conjunction with other Parties to the MOA. The specific measures applicable to the Tribe are detailed in the PBO.

2. Desert Tortoise

RPM 2: *The BIA and BLM shall ensure the level of incidental take anticipated in this biological opinion is commensurate with the analysis contained herein.*

Terms and Conditions:

The following terms and conditions implement RPM 1:

2.a. To ensure that the conservation measures are effective and properly implemented, the Service shall be informed immediately upon discovery of a desert tortoise that has been killed or injured as a result of project activities. At that time, and in coordination with the Service, the BIA or BLM must review the circumstances surrounding the incident to determine whether additional protective measures are required. Project activities may continue pending outcome of the review, provided the conservation measures included as part of the proposed action (see "Conservation Measures" section) and the terms and conditions in this biological opinion have been and continue to be fully implemented.

2.b. We do not expect that take, in the form of capture or collection, required to move desert tortoises out of harm's way during construction of the linear project components, will result in mortality or injury of any individuals. Therefore, we are not establishing a reinitiation criterion or notification requirement for the number of individuals that would be moved out of harm's way during construction of linear project components.

2.c. If more than 103 subadult or adult desert tortoises are identified for translocation during clearance surveys or desert tortoise mortalities exceed thresholds in Table 8, the BIA must reinitiate consultation on the proposed action. This term and condition only applies to clearance of the project sites for construction and does not apply to the short distance movement of desert tortoises out of harm's way.

2.d. Desert tortoises that are determined to be sick or injured, or if they fail to do well following translocation, will be relocated to an appropriate facility if directed to do so by the Service. The Applicant is responsible for paying for care of desert tortoises taken to the Desert Tortoise Conservation Center or other facility as directed by the Service.

RPM 3: *The BIA or BLM shall ensure that desert tortoises and their eggs in harm's way are located, properly handled, and moved to safety.*

Terms and Conditions:

3.a. Tortoise-proof fencing shall be installed around the boundary of the solar facility. Fence specifications will be consistent with those approved by the Service in the Desert Tortoise Field Manual (Service 2009). Once exclusion fencing is installed, an authorized desert tortoise biologist will survey the area to ensure that no tortoises or active burrows are present within the fenced area. Fencing will be checked monthly and after precipitation that results in erosion along the base of the fence. Repairs will be made in a timely manner upon discovery. Monitoring and maintenance shall include regular removal of trash and sediment accumulation and restoration of zero ground clearance between the ground and the bottom of the fence, including re-covering the bent portion of the fence if not buried.

Tortoise guards shall be placed at all road access points, where desert tortoise-proof fencing is interrupted, to exclude desert tortoises from the road and solar facility. The Applicant shall coordinate with the Service on placement and design of tortoise guards and their connection with the fencing, to ensure that the guards provide a functional barrier to desert tortoises. Tortoise guards will be inspected quarterly and maintained to ensure they continue to function as a tortoise barrier.

3.b. The proposed desert tortoise education program (Conservation Measure 2) shall be presented to all personnel onsite during construction activities by an authorized desert tortoise biologist. This program will contain information concerning the biology and distribution of the desert tortoise, its legal status and occurrence in the proposed project area, the definition of take and associated penalties, measures designed to minimize the effects of construction activities, the means by which employees can facilitate this process, and reporting requirements to be implemented when desert tortoises are encountered.

3.c. A designated field contact representative (FCR) will be assigned to the construction phase of the solar project components; additional FCRs will be assigned for the linear project components including the transmission line on the BLM ROW, water pipeline, and 12 kV transmission line. Authorized desert tortoise biologists and the FCRs shall be onsite during all construction activities to ensure compliance with this biological opinion, including avoidance of inadvertently harming any desert tortoises that may wander onto the construction site. The authorized desert tortoise biologist and FCRs shall be responsible for: (1) enforcing the litter-control program; (2) ensuring that desert tortoise habitat disturbance is restricted to authorized areas; (3) ensuring that all equipment and materials are stored within the boundaries of the construction zone or within the boundaries of previously-disturbed areas or designated areas; (4) ensuring that all

vehicles associated with construction activities remain within the proposed construction zones; and (5) ensuring compliance with the conservation measures of this biological opinion.

Potential authorized desert tortoise biologists must submit their statement of qualifications to the Service's Nevada Fish and Wildlife Office for approval, allowing a minimum of 30 days for Service response. The statement form is available on the internet at: *http://www.fws.gov/nevada/desert_tortoise/auth_dt_form.htm*. Within 3 days of employment or assignment, the Applicant, BLM, or BIA shall provide the Service with the names of FCRs and biological monitors who assisted the authorized desert tortoise biologist.

3.d. Prior to surface-disturbing activities, authorized desert tortoise biologists potentially assisted by project monitors, shall conduct a clearance survey to locate and remove all desert tortoises from areas to be disturbed or harm's way using techniques providing full coverage of all areas. Two passes of complete coverage will be accomplished. The authorized desert tortoise biologists shall also capture, handle, relocate, and translocate desert tortoises from harm's way in accordance with the Desert Tortoise Field Manual (Service 2009) and translocation plan (Appendix A), as appropriate. Any desert tortoise eggs found in harm's way will be relocated from harm's way by an authorized desert tortoise biologist in accordance with approved protocol (Service 2009). Desert tortoise burrows that occur immediately outside work areas that can be avoided by project activities shall be clearly marked or flagged to prevent crushing. If there are differences between the translocation plan and this biological opinion, the biological opinion takes precedence. Burrows occupied by adult females will be examined thoroughly for nests and eggs during the months of May through October.

3.e. All burrows found within areas proposed for disturbance, whether occupied or vacant, shall be excavated by an authorized desert tortoise biologist and collapsed or blocked to prevent desert tortoise re-entry. All burrows will be excavated with hand tools to allow removal of desert tortoises or desert tortoise eggs. All desert tortoise handling and excavations, including nests, will be conducted by an authorized desert tortoise biologist in accordance with Service-approved protocol (Service 2009).

3.f. **Project areas outside the fenced solar facility:** All desert tortoises in harm's way shall be relocated to safe areas up to 1,000 feet from the point of capture in accordance with the Desert Tortoise Field Manual (Service 2009). If a tortoise is injured as a direct or indirect result of project activities, it shall be immediately transported to a veterinarian or wildlife rehabilitation facility.

Tortoises within the solar facility footprint and within 1,000 feet of the boundary may be considered for relocation to secure areas outside the fence if approved by

the Service. The Applicant will prepare a desert tortoise disposition plan, approved by the Service, prior to surface disturbance. The desert tortoise disposition plan will be based on health assessments and provide instruction on movement and release of all displaced tortoises.

3.g. Any project-related activity that may endanger a desert tortoise shall cease if a desert tortoise is found on the project site. Project activities may resume after an authorized desert tortoise biologist removes the desert tortoise from danger or after the desert tortoise has moved to a safe area.

3.h. If a tortoise is found and relocated to a safe area, an authorized desert tortoise biologist, biological monitor, or FCR shall inform workers in the area to be particularly watchful for the tortoise as it may return to the work area.

3.i. Areas underneath parked project vehicles and equipment will be inspected for desert tortoises before moving them.

3.j. Vehicle speed within the project area will not exceed 25 mph. Speed limits will be clearly marked and all workers will be made aware of these limits.

3.k. Water used for fugitive dust control will not be allowed to pool on access roads or other project areas outside the fenced area, as this can attract desert tortoises. Similarly, leaks on water trucks and water tanks will be repaired to prevent pooling water.

3.l. Should any desert tortoise be injured or killed, all activities that have the potential for take will be halted, and the FCR and/or authorized desert tortoise biologist immediately contacted, who will notify the appropriate office of the Service.

3.m. The BIA, BLM, Tribe, and Applicant shall implement appropriate measures, which may include measures not specified in this biological opinion, to ensure that desert tortoises captured and moved, or occur in harm's way do not die or become injured as a direct or indirect (e.g., predation, maladjustment to release areas) result of the project. Measures in this biological opinion may require modification or additional measures may be necessary in response to conditions and situations that pose a threat to the well-being of desert tortoises, in consultation with the Service.

RMP 4: *The BIA or BLM shall ensure implementation of measures to minimize predation on desert tortoises by ravens or other desert tortoise predators attracted to the action area.*

Terms and Conditions:

4.a. A litter control program shall be implemented to reduce the attractiveness of the area to opportunistic predators such as desert kit fox, coyotes, and common

ravens. Trash and food items will be disposed properly in predator-proof containers with re-sealing lids. Trash containers will be emptied and construction waste will be removed daily from the project area and disposed of in an approved landfill.

4.b. The Applicant will monitor for the presence of ravens and other potential human-subsidized predators will be conducted and a control plan will be implemented if predator densities substantially increase in the vicinity of the facility, in coordination with the Service. In addition to trash management, the Applicant will implement BMPs to discourage the presence of ravens onsite including elimination of available water sources, designing structures to discourage potential nest sites, use of hazing to discourage raven presence, and active monitoring of the site for presence of ravens.

4.c. Dogs will be prohibited in all project work areas.

RMP 5: *The BIA or BLM shall ensure implementation of measures to minimize loss and long-term degradation of desert tortoise habitat, such as soil compaction, erosion, crushed vegetation, or introduction of non-native invasive plants or weeds as a result of project activities.*

Terms and Conditions:

5.a. Perennial native vegetation will be flagged and avoided to the maximum extent practicable.

5.b. Cross-country travel and travel outside designated areas shall be prohibited.

5.c. The Applicant and Tribe will coordinate to salvage and relocate cacti, yuccas, and shrubs on linear ROWs and plant them back on temporarily disturbed portions of the ROWs similar to the efforts undertaken on adjacent BLM lands. If the Tribe chooses to salvage plants from the 2,000-acre solar facility, these plants may be held in a nursery or other temporary holding location until needed; no monitoring is required for these plants.

5.d. All work area boundaries will be conspicuously staked, flagged, or otherwise marked to minimize surface disturbance activities. All workers, equipment, vehicles, and construction materials shall remain within the ROW, existing roads, and designated areas. Staging areas will be located in previously-disturbed areas whenever possible.

5.e. The Applicant will develop a habitat restoration plan to be implemented for all temporary disturbances associated with construction of the project to be approved by the BIA, BLM (for disturbance of BLM land), Tribe, and the Service.

5.f. The proposed Weed Management Plan will be developed and implemented (Conservation Measure 15).

5.g. Final power transmission tower and associated spur road locations will be adjusted to avoid potentially active tortoise burrows to the maximum extent practicable.

5.h. In accordance with the project description, the Applicant will pay remuneration fees to the Tribe based on acreage of disturbance. Since that fee will be paid to the Tribe, we analyzed the two conservation options that the Tribe proposed to assist in offsetting impact to the desert tortoise in the proposed action section of this biological opinion. The Tribe's decision on whether or not to establish the conservation area in perpetuity (Option 1) or implement conservation actions Reservation-wide (Option 2) will be made and provided to the Service before translocation of tortoise begins. Option 1 requires protection in perpetuity; if option 2 is chosen, the BIA will consult with the Service before the protection is extinguished.

Option 1: Establish a 6,000-acre conservation area in perpetuity. The Tribe will approve or modify an existing Tribal Resolution with the Service, to conserve the 6,000-acre area in perpetuity after the final boundary is determined. The Tribe and Service will develop a desert tortoise management plan and annual work plans that prescribe conservation actions necessary to sustain and improve the status of the desert tortoise and its habitat in the conservation area. The management plan will be completed **within 6 months of project start date** and will identify uses that are compatible and non-compatible with desert tortoise conservation. The Tribe and Service will agree on expenditures of funds.

Option 2: Implement tortoise conservation actions Reservation-wide. The Tribe and Service will develop annual work plans to identify and prioritize expenditure of the remuneration funds across suitable areas of the Reservation. No areas will be designated for tortoise conservation in perpetuity and all funds will be used to implement conservation actions in areas agreed upon by the Tribe and Service.

For both options: The Tribe and Service shall agree upon expenditure of all remuneration fees; if agreement cannot be reached, reinitiation of consultation will be required. Annual work plans will be prepared and become effective January 1st of each year.

5.i. The Service and Tribe will determine the final boundaries of the area(s) to be conserved where most displaced desert tortoises establish their home ranges, **within 2 years following their release.** The Service determined that no more than 6,000 acres should be conserved during the life of the project which may occur on the primary recipient site or other areas as agreed upon by the Tribe and

Service. The boundaries of the area will be marked or delineated on the ground which may be accomplished by placement of carbonite signs every 500 feet or range fencing.

RPM 6: *The* BIA or *BLM shall ensure implementation of measures to ensure compliance with the RPMs, Terms and Conditions, reporting requirements, and reinitiation requirements contained in this biological opinion.*

Terms and Conditions:

6.a. **Construction and O&M reporting requirements:** The BIA and/or BLM will be responsible for providing monthly reports during construction and annual reports during O&M activities. The BIA and BLM may delegate this responsibility to the Tribe or Applicant. In addition, a final construction report will be submitted to the Service within 60 days of completion of construction of the project. All monthly reports are due within 10 days following the end of the month and annual reports are due February 1 of each year. The Service anticipates the first annual report by February 1, 2013, if construction or project activities occur in 2012. Annual reports shall be provided to the Service during O&M activities for the life of the facility. Specifically, these reports must include information on any instances when desert tortoises were killed, injured, or handled; the circumstances of such incidents; and any actions undertaken to prevent similar incidents from reoccurring.

Tortoise monitoring reporting requirements: These reports are required monthly during the first year following translocation and quarterly for the remainder of the monitoring period. Generally, the reports should provide detailed information on the results of translocation monitoring, including the following: 1) location of all transmittered desert tortoises; 2) mortality rate from each of the translocated, resident, and control populations; 3) statistical analysis of differences in the mortality rates among all three populations (translocated, residents at the recipient site, and control); and 4) the health status and body condition of all transmittered desert tortoises. The reports would also outline the schedule that was followed for implementing the minimization measures as well as biological observations (as stated above) and the general success of each of the minimization measures and the maintenance activities that occurred over that period.

The authorized desert tortoise biologist shall record each observation of desert tortoise handled in the tortoise monitoring reports. Information will include the following: location (GPS), date and time of observation, whether desert tortoise was handled, general health and whether it voided its bladder, location desert tortoise was moved from and location moved to, unique physical characteristics of each tortoise, and effectiveness and compliance with the desert tortoise protection measures.

6.b. Any incident occurring during project activities that was considered by the FCR, authorized desert tortoise biologist or biological monitor to be in non-compliance with this biological opinion will be documented immediately by the authorized desert tortoise biologist.

Table 9. Summary of reporting requirements.

Action	Timing and Due Date
Determine Option 1 or Option 2	Due within 6 months from project start date[1]
Prepare management plan for conservation area (Option 1)	Due within 6 months from project start date[1]
Determine funding for actions in annual work plans; and Tribal compensation and management plan if Option 1 is chosen	Due within 6 months from project start date[1]
Final work plans prepared	January 1st of each year
Remuneration fee adjusted for inflation	March 1st of each year
Determine final boundary of 6,000-acre recipient site	2 years following final release of translocated tortoises
Monthly construction reports	Due within first 10 days of following month, beginning the first month of construction and continuing until O&M begins
Final construction report	Due within 60 days following completion of construction activities
Annual O&M reports	February 1st for previous calendar year
Tortoise monitoring reports	Monthly during first year following the start of translocation; quarterly reports for second and subsequent years, due April10th, July 10th, October 10th, and January 10th for previous 3 month period
Instances of non-compliance, tortoise injury or mortality	Immediately

[1]Timeframe may be adjusted as agreed by the Tribe, BIA, and Service

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. We recommend that the Applicant consider Tribal members for certain tortoise monitoring activities.
2. We recommend that the Tribe salvage plants on the solar project site for use in habitat enhancement or restoration on the Reservation in conjunction with conservation actions

to be undertaken with remuneration funds. If the Tribe chooses to salvage plants from the 2,000-acre solar facility, these plants may be held in a nursery or other temporary holding location until needed; no monitoring or other requirements would be required for these plants.

3. We recommend that the U.S. Geological Survey, Biological Resources Division (USGS) and the San Diego Zoo be involved in the translocation of desert tortoises. The USGS and Zoo have been trained and approved by the Service, and have extensive experience in desert tortoise translocation.

4. We recommend that the Tribe and Applicant consider retrofitting the existing irrigation diversion of the Muddy River on the Reservation to function as a barrier to non-native fish which are a threat to the Moapa dace, as well as a diversion structure in consultation with the Service.

5. Desert tortoise fencing installed for the previously proposed Ash Grove Cement Project should be removed or breaches established to reduce fragmentation of the habitat and reduce the threat to tortoises and other wildlife.

REINITIATION NOTICE

This concludes formal consultation on BIA's proposal to approve the lease for development of a solar energy project and BLM's proposal to issue ROW grants to K Road for construction of the electrical transmission lines on BLM-administered lands. Consistent with 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal involvement or control over the action has been retained (or is authorized by law) and if: 1) the amount or extent of take specified in the incidental take statement is exceeded; 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; 3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this biological opinion; and 4) a new species is listed or critical habitat designated that may be affected by the action. In addition, if any of the stated assumptions used in our analysis are invalidated, BIA or BLM must reinitiate consultation.

LITERATURE CITED

Moapa Dace

Coburn, M.M. and T.M. Cavendar. 1992. Interrelationships of North American cyprinid. Pages 328-273 *in* Systematics, Historical Ecology, and North American Freshwater Fishes. R.L. Mayden (ed.). Stanford University Press, Stanford, California.

Cross, J. N. 1976. Status of the native fish fauna of the Moapa River (Clark County, Nevada). Transactions of the American Fisheries Society 105(4):503-508.

Deacon, J. E. and W. C. Bradley. 1972. Ecological distribution of the fishes of the Moapa (Muddy) River in Clark County, Nevada. Transactions of the American Fish Society 101(3): 408-419.

Hubbs, C. L. and R. R. Miller. 1948. Two new, relict genera of cyprinid fishes from Nevada. University of Michigan Museum of Zoology Occasional Paper 507:1-30.

Ono, R. D., J. D. Williams, and A. Wagner. 1983. Vanishing fishes of North America. Stone Wall Press, Washington, D.C. 257 pages.

Resource Concepts, Inc. 2005. Biological assessment/biological evaluation, Coyote Springs Investment. Prepared for Coyote Springs Investment, LLC, Sparks, Nevada. 38 pages plus appendices.

Rinne, John N. and W.L. Minckley. 1991. Native fishes of arid lands: a dwindling resource of the desert southwest. General Technical Report RM-206. Fort Collins, Colorado; U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 45 pages.

Scoppettone, G. G., H. L. Burge, and P. L. Tuttle. 1992. Life history, abundance, and distribution of Moapa dace (*Moapa coriacea*). Great Basin Naturalist 52:216-225.

Scoppettone, G. G. 1993. Interactions between Native and Non-native Fishes of the Upper Muddy River, Nevada. Transactions of the American Fisheries Society 122:599-608.

U.S. Fish and Wildlife Service (Service). 1995. Recovery plan for the rare aquatic species of the Muddy River Ecosystem. Portland, Oregon. 60 pp.

U.S. Fish and Wildlife Service (Service). 2006. Intra-Service programmatic biological opinion for the proposed Muddy River memorandum of agreement regarding the groundwater withdrawal of 16,100 acre-feet per year from the regional carbonate aquifer in Coyote Spring Valley and California Wash Basins, and establish conservation measures for the Moapa Dace, Clark County, Nevada. Intra-Service biological opinion, File No. 1-5-05-FW-536. January 11, 2006

U.S. Fish and Wildlife Service. 1996. Recovery plan for the rare aquatic species of the Muddy River ecosystem. Service; Portland, Oregon. 60 pages.

Desert Tortoise

Abella, S.R. 2010. Disturbance and plant succession in the Mojave and Sonoran deserts of the American Southwest. International Journal of Environmental Research and Public Health 7:1248-1284.

Aber, J.D., K.J. Nadelhoffer, P. Steudler, and J.M. Melillo. 1989. Nitrogen saturation in northern forest ecosystems. Bioscience 39:378-386.

Allee, W.C. 1931. Animal aggregations: a study in general sociology. University of Chicago Press.

ARCADIS. 2011a. Biological assessment, K Road Moapa solar project. September 2011. Unpublished report prepared for the U.S. Bureau of Indian Affairs, U.S. Bureau of Land Management, and U.S. Fish and Wildlife Service on behalf of the Moapa Band of Paiute Indians.

ARCADIS. 2011b. Administrative draft environmental impact statement. K Road Moapa solar facility. October 2011. Unpublished report prepared for the U.S. Bureau of Indian Affairs, U.S. Bureau of Land Management, Environmental Protection Agency, and U.S. Army Corps of Engineers on behalf of the Moapa Band of Paiute Indians.

Avery, H.W. 1992. Summer food habits of desert tortoises in Ivanpah Valley, California. Proceedings of the Desert Tortoise Council Symposium 1992:60.

Avery, H.W. 1998. Nutritional ecology of the desert tortoise (*Gopherus agassizii*,) in relation to cattle grazing in the Mojave Desert. PhD dissertation, University of California, Los Angeles.

Averill-Murray, R.C. 2002. Effects on survival of desert tortoises (*Gopherus agassizii*) urinating during handling. Chelonian Conservation and Biology 4:430-435.

Berry, K.H. 1986. Desert tortoise (*Gopherus agassizii*) relocation: Implications of social behavior and movements. Herpetologica 42:113-125.

Berry, K. H. 1997. Demographic consequences of disease in two desert tortoise populations in California. Proceedings: conservation, restoration, and management of tortoises and turtles - an international conference. Pages 91-99.

Berry, K. H. 1999. Preliminary report from the 1999 spring survey of the desert tortoise long-term study plot in Chemehuevi Valley and Wash, California. Box Springs Field Station, Western Ecological Research Center, U.S. Geological Survey. Riverside, California.

Berry, K. H. 2003. Declining trends in desert tortoise populations at long-term study plots in California between 1979 and 2002: multiple issues. Abstract of paper presented at the twenty-eighth annual meeting of the Desert Tortoise Council.

Berry, K.H. and B.L. Burge. 1984. The desert tortoise in Nevada. Chapter 8 *In*: the status of the desert tortoise *(Gopherus agassizii)* in the United States. Report to U.S. Fish and Wildlife Service from the Desert Tortoise Council. Order No. 11310-0083-81.

Berry, K.H. 1996. Summary of the results of long-term study plots for the desert tortoise in California. Letter to Bureau of Land Management, Riverside, California. Dated October 1, 1996. Riverside Field Station, U.S. Geological Survey, Riverside, California.

Berry, K.H. 1999. Preliminary report from the 1999 spring survey of the desert tortoise long-term study plot in Chemehuevi Valley and Wash, California. Box Springs Field Station, Western Ecological Research Center, U.S. Geological Survey, Riverside, California.

Berry, K.H. 2003. Declining trends in desert tortoise populations at long-term study plots in California between 1979 and 2002: multiple issues. Desert Tortoise Council Symposium. Abstract.

Boarman, W.I. 2002. Threats to desert tortoise populations: A critical review of the literature. U.S. Geological Survey, Western Ecological Research Center, Sacramento, California.

Boarman, W.I., and M. Sazaki. 2006. A highway's road-effect zone for desert tortoises (*Gopherus agassizii*). Journal of Arid Environments 65:94-101.

Bowles, A.E., E. Eckert, L. Starke, E. Berg, L. Wolski, and J. Matesic, Jr. 1999. Effects of flight noise from jet aircraft and sonic booms on hearing, behavior, heart rate, and oxygen consumption of desert tortoise (*Gopherus agassizii*). AFRL-HE-WP-TR-1999-0170. Sea World Research Institute, Hubbs Marine Research Center, San Diego, California.

Britten, H.B., B.R. Riddle, P.F. Brussard, R. Marlow, and T.E. Lee. 1997. Genetic delineation of management units for the desert tortoise, *Gopherus agassizii*, in northeastern Mojave Desert. Copeia 1997:523-530.

Brooks, M.L. 2003. Effects of increased soil nitrogen on the dominance of alien annual plants in the Mojave Desert. Journal of Applied Ecology 40:344-353.

Brooks, M.L., and T.C. Esque. 2002. Alien plants and fire in desert tortoise (*Gopherus agassizii*) habitat of the Mojave and Colorado deserts. Chelonian Conservation and Biology 4:330-340.

Bureau of Land Management (BLM). 1990. Draft raven management plan for the California Desert Conservation Area. Prepared by Bureau of Land Management, California Desert District, Riverside, California.

Bureau of Land Management and Department of Energy. 2010. Draft programmatic environmental impact statement for solar energy development in six southwestern states. Washington D.C.

Bulova, S. J. 1994. Patterns of burrow use by desert tortoises: gender differences and seasonal trends. Herpetological. Monographs 8:133-143.

Buckland, S. T., D. R. Anderson, K. P. Burnham, J. L. Laake, D.L. Borchers, and L. Thomas. 2001. Introduction to distance sampling: estimating abundance of biological populations. Oxford: Oxford University Press.

Bunn, D., A. Mummert, R. Anderson, K. Gilardi, M. Hoshovsky, S. Shanks, and K. Stahle. 2006. California Wildlife: Conservation Challenges (California's Wildlife Action Plan). Prepared for the California Department of Fish and Game by the Wildlife Health Center, University of California, Davis.

Burge, B.L. 1977. Daily and seasonal behavior, and areas utilized by the desert tortoise, *Gopherus agassizii*, in southern Nevada. Proceedings of the Desert Tortoise Council Symposium 1977:59-94.

Burge, B.L. 1978. Physical characteristics and patterns of utilization of cover sites by *Gopherus agassizii* in southern Nevada. Proceedings of the 1978 Desert Tortoise Council Symposium. pp. 80-111.

Burge, B.L. and W.G. Bradley. 1976. Population density, structure and feeding habits of the desert tortoise *(Gopherus agassizii)*, in a low desert study area in southern Nevada. Proceedings of the 1976 Desert Tortoise Council Symposium. Pages 51-74.

Bury, R.B., T.C. Esque, L.A. DeFalco, and P.A. Medica. 1994. Distribution, habitat use, and protection of the desert tortoise in the Eastern Mojave Desert. *In:* R. B. Bury and D. J. Germano, editors. Biology of the North American tortoises. National Biological Survey, Fish and Wildlife Research 13. Pages 57-72.

D'Antonio, C.M., and P.M. Vitousek. 1992. Biological invasions by exotic grasses, the grass/fire cycle, and global change. Annual Review of Ecology and Systematics 23:63-87.

Drake, K. K., T. C. Esque, K. E. Nussear, B. M. Jacobs, K. M. Nolte, and P. A. Medica. 2009. An annual report for the Fort Irwin desert tortoise translocation project; 2009 progress. Prepared for U.S. Army National Training Center, Directorate of Public Works. U.S. Geological Survey, Las Vegas Field Station, Henderson, Nevada.

Duda, J.J., A.J. Krzysik, and J.E. Freilich. 1999. Effects of drought on desert tortoise movement and activity. Journal of Wildlife Management 63:1181-1192.

Edwards, T., C.S. Goldberg, M.E. Kaplan, C.R. Schwalbe, and D.E. Swann. 2004a. Implications of anthropogenic landscape change on inter-population movements of the desert tortoise (*Gopherus agassizii*). Conservation Genetics 5:485-499.

Edwards, T., E.W. Stitt, C.R. Schwalbe, and D.E. Swann. 2004b. *Gopherus agassizii* (desert tortoise). movement. Herpetological Review 35:381-382.

Esque, T.C. 1992. Diet selection of the desert tortoise in the northeast Mojave Desert – FY 1991 update. Proceedings of the Desert Tortoise Council Symposium 1992:64-68.

Esque, T.C. 1994. Diet and diet selection of the desert tortoise (*Gopherus agassizii*) in the northeastern Mojave Desert. Master's Thesis. Colorado State University, Fort Collins.

Esque, T. C., K. E. Nussear, K. K. Drake, A. D. Walde, K. H. Berry, R. C. Averill-Murray, A. P. Woodman, W. I. Boarman, P. A. Medica, J. Mack, and J. S. Heaton. 2010. Effects of subsidized predator, resource variability, and human population density on desert tortoise populations in the Mojave Desert. Endangered Species Research 12:167–177.

Evans, R. 2001. Free-roaming dog issues at the United States Marine Corps Air Ground Combat Center, Twentynine Palms, California. Proceedings of the 2001 Desert Tortoise Council Symposium.

Field, K.J., C.R. Tracy, P.A. Medica, R.W. Marlow, and P.S. Corn. 2007. Return to the wild: translocation as a tool in conservation of the desert tortoise (*Gopherus agassizii*). Biological Conservation 136:232-245.

Fischer, J. and D. B. Lindenmayer. 2007. Landscape modification and habitat fragmentation: a synthesis. Global Ecology and Biogeography 16(3):265-280.

Gardner, T. J. and E. D. Brodie, Jr. 2000. The occupation of steep slopes by desert tortoises (*Gopherus agassizii*) in the western Mojave Desert: A description of occupied habitats, habitat use, and desert tortoise density. Final report.

Germano, D.J. 1994. Comparative life histories of North American tortoises. Pages 175-185 *in* R.B. Bury and D.J. Germano (eds.), Biology of North American Tortoises. National Biological Survey, Fish and Wildlife Research 13, Washington, D.C.

Germano, D.J., R.B. Bury, T.C. Esque, T.H. Fritts, and P.A. Medica. 1994. Range and habitat of the desert tortoise. Pages 57-72 *in* R.B. Bury and D.J. Germano (eds.), Biology of the North American Tortoises. National Biological Survey, Fish and Wildlife Research 13, Washington, D.C.

Hagerty, B.E. 2008. Ecological genetics of the Mojave Desert tortoise. Ph.D. Dissertation. University of Nevada, Reno.

Hagerty, B.E., and C.R. Tracy. 2010. Defining population structure for the Mojave desert tortoise. Conservation Genetics. DOI 10.1007/s10592-010-0073-0.

Hagerty, B.E., K.E. Nussear, T.C. Esque, and C.R. Tracy. 2010. Making molehills out of mountains: landscape genetics of the Mojave desert tortoise. Landscape Ecology. DOI 10.1007/s10980-010-9550-6.

Harless, M.L., A.D. Walde, D.K. Delaney, L.L. Pater, and W.K. Hayes. 2009. Home range, spatial overlap, and burrow use of the desert tortoise in the West Mojave Desert. Copeia 2009:378-389.

Hazard, L.C., D.R. Shemanski, and K.A. Nagy. 2002. Calcium and phosphorus availability in native and exotic food plants. Proceedings Desert Tortoise Council Symposium 2001-2002:63.

Henen, B.T. 1992. Desert tortoise diet and dietary deficiencies that may limit egg production at Goffs, California. Proceedings of the Desert Tortoise Council Symposium 1992:97.

Henen, B.T. 1997. Seasonal and annual energy budgets of female desert tortoises (*Gopherus agassizii*). Ecology 78:283-296.

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. The Resources Agency, Department of Fish and Game, State of California.

Hovik, D.C. and D.B. Hardenbrook. 1989. Summer and fall activity and movements of desert tortoise in Pahrump Valley, Nevada. Abstract of paper presented at the fourteenth annual meeting of the Desert Tortoise Council.

Jennings, B. 1992. Observations on the feeding habits and behavior of desert tortoises at the Desert Tortoise Natural Area, California. Proceeding of the Desert Tortoise Council Symposium 1992:69-81.

Jennings, W.B. 1993. Foraging ecology of the desert tortoise (*Gopherus agassizii*) in the western Mojave Desert. M.S. Thesis. University of Texas, Arlington.

Jennings, W.B. 1997. Habitat use and food preference of the desert tortoise, *Gopherus agassizii*, in the Western Mojave Desert and impacts of off-road vehicles. Proceedings: Conservation, Restoration, and Management of Tortoises and Turtles–An International Conference. Pages 42-45.

Karl. A. 1981. The distribution and relative densities of the desert tortoise *(Gopherus agassizii)* in Lincoln and Nye Counties, Nevada. Proceedings of the 1981 Desert Tortoise Council Symposium. Pages 76-92.

Karl, A.E. 1983a. The distribution and relative densities of the desert tortoise *(Gopherus agassizii)* in Clark County, Nevada. Unpublished Report to Bureau of Land Management, Denver, Colorado. Contract No. YA-512-CT9-90. 46 pp.

Karl, A.E. 1983b. The distribution, relative densities, and habitat associations of the desert tortoise *(Gopherus agassizii)* in Nevada. M.S. Thesis, California State University, Northridge. 111 pages.

Lamb, T., J.C. Avise, J. W. Gibbons. 1989. Phylogeographic patterns in mitochondrial DNA of the desert tortoise (*Xerobates agassizii*), and evolutionary relationships among North American gopher tortoises. Evolution 43: 76-87.

Latch, E.K., W.I. Boarman, A. Walde, R.C. Fleischer. 2011. Fine-scale analysis reveals cryptic landscape genetic structure in desert tortoises. PLoS ONE 6(11): e27794. doi:10.1371/journal.pone.0027794.

Longshore, K.M., J.R. Jaeger, and J.M. Sappington. 2003. Desert tortoise (*Gopherus agassizii*) survival at two eastern Mojave Desert sites: death by short-term drought? Journal of Herpetology 37:169–177.

Lovich, J.E., and D. Bainbridge. 1999. Anthropogenic degradation of the southern California desert ecosystem and prospects for natural recovery and restoration. Environmental Management 249:309-326.

Luckenbach, R.A. 1982. Ecology and management of the desert tortoise *(Gopherus agassizii)* in California. *In* R.B. Bury (ed.). North American Tortoises: Conservation and Ecology. U.S. Fish and Wildlife Service, Wildlife Research Report 12, Washington, D.C.

Luke, C., A. Karl, and P. Garcia. 1991. A status review of the desert tortoise. Biosystems Analysis, Inc., Tiburon, California.

Medica, P.A., R.B. Bury, and F.B. Turner. 1975. Growth of the desert tortoise (*Gopherus agassizii*) in Nevada. Copeia 1975:639-643.

Minnich, J.E. 1970. Water and electrolyte balance of the desert iguana, *Dipsosaurus dorsalis,* in its native habitat. Comparative Biochemistry and Physiology 35:921-933.

Minnich, J.E. 1979. Comparison of maintenance electrolyte budgets of freeliving desert and gopher tortoises (*Gopherus agassizzi* and G. *polyphemus*). Proceedings of the Desert Tortoise Council Symposium 1979:166-174.

Mueller, J.M., K.R. Sharp, K.K. Zander, D.L. Rakestraw, K.R. Rautenstrauch, and P.E. Lederle. 1998. Size-specific fecundity of the desert tortoise (*Gopherus agassizii*). Journal of Herpetology 32:313-319.

Murphy, R.W., K.H. Berry, T. Edwards, and A.M. McLuckie. 2007. A genetic assessment of the recovery units for the Mojave population of the desert tortoise, *Gopherus agassizii.* Chelonian Conservation and Biology 6:229-251.

Naegle, S. 1976. Physiological response of the desert tortoise, *Gopherus agassizii.* Master of Science thesis, University of Nevada, Las Vegas, Nevada.

Nagy, K.A., and P.A. Medica. 1986. Physiological ecology of desert tortoises. Herpetologica 42:73-92.

Nagy, K.A. 1972. Water and electrolyte budgets of a free-living desert lizard, *Sauromalus obesus.* Journal of Comparative Physiology 79:93-102.

Nagy, K.A., B.T. Henen, and D.B. Vyas. 1998. Nutritional quality of native and introduced food plants of wild desert tortoises. Journal of Herpetology 32:260-267.

Nussear, K.E. 2004. Mechanistic investigation of the distributional limits of the desert tortoise, *Gopherus agassizii.* Ph.D. Dissertation. University of Nevada, Reno.

Nussear, K.E., T.C. Esque, R.D. Inman, L. Gass, K.A. Thomas, C.S.A. Wallace, J.B. Blainey, D.M. Miller, and R.H. Webb. 2009. Modeling habitat of the desert tortoise (*Gopherus agassizii*) in the Mojave and parts of the Sonoran deserts of California, Nevada, Utah, and Arizona. U .S. Geological Survey Open-file Report 2009-1102. 18 pp.

Oftedal, O.T. 2002. The nutritional ecology of the desert tortoise in the Mojave and Sonoran deserts. Pages 194-241 i*n* T.R. Van Devender (ed.), The Sonoran Desert Tortoise; Natural History, Biology and Conservation. University of Arizona Press, Tucson, Arizona.

Oftedal, O.T. and M.E. Allen. 1996. Nutrition as a major facet of reptile conservation. Zoo Biology 15:491-497.

Oftedal, O.T., S. Hillard, and D.J. Morafka. 2002. Selective spring foraging by juvenile desert tortoises (*Gopherus agassizii*) in the Mojave Desert: Evidence of an adaptive nutritional strategy. Chelonian Conservation and Biology 4:341-352.

Peterson, C.C. 1996a. Ecological energetics of the desert tortoise (*Gopherus agassizii*): effects of rainfall and drought. Ecology 77:1831–1844.

Rainboth, W.J., D.G. Booth, and F B. Turner. 1989. Allozyme variation in Mojave populations of the desert tortoise. Copeia 1989: 115-123

Rakestraw, D.L. 1997. Desert tortoise relocation at Yucca Mountain, Nevada. Abstract of paper presented at the 1997 Annual Meeting and Symposium of the Desert Tortoise Council.

Ricketts, T.H. 2000. The matrix matters. The American Naturalist 158(1):87-99.

Saethre, M.B., T.C. Esque, P.A. Medica, R. Marlow, and C.R. Tracy. 2003. Determining carrying capacity of desert tortoises. Abstract of a paper present at the 28th Annual Meeting and Symposium of the Desert Tortoise Council.

Segelbacher, G., S.A. Cushman, B.K. Epperson, M. Fortin, O. Francois, O.J. Hardy, R. Holderegger, P. Taberlet, L.P. Waits, and S. Manel. 2010. Applications of landscape genetics in conservation biology: concepts and challenges. Conservation Genetics 11(2):375-385.

Stitt, E.W., C.R. Schwalbe, D.E. Swann, R.C. Averill-Murray, and A.K. Blythe. 2003. Sonoran desert tortoise ecology and management: effects of land use change and urbanization on desert tortoises. Final report to Saguaro National Park.

Tracy, C.R., R.C. Averill-Murray, W.I. Boarman, D. Delehanty, J.S. Heaton, E.D. McCoy, D.J. Morafka, K.E. Nussear, B.E. Hagerty, and P.A. Medica. 2004. Desert Tortoise Recovery Plan Assessment. Report to the U.S. Fish and Wildlife Service, Reno, Nevada.

TRW Environmental Safety Systems Inc. 1997. Patterns of burrow use by desert tortoises at Yucca Mountain, Nevada. Unpublished report to U.S. Department of Energy. TRW Environmental Safety Systems Inc., Las Vegas, Nevada

Turner, R.M. 1982. Mohave desertscrub. *In*: Biotic communities of the American southwest-United States and Mexico. D. E. Brown, editor. Special issue of desert plants, volume 4. Pages 157-168.

Turner, R.M. and D.E. Brown. 1982. Sonoran desertscrub. *In*: Biotic communities of the American southwest-United States and Mexico. D. E. Brown, editor. Special issue of desert plants, volume 4. Pages 181-221.

Turner, F.B., P.A. Medica, and C.L. Lyons. 1984. Reproduction and survival of the desert tortoise *(Scaptochelys agassizii)* in Ivanpah Valley, California. Copeia 4:811-820.

Turner, F.B., P. Hayden, B.L. Burge, and J.B. Roberson. 1986. Egg production by the desert tortoise (*Gopherus agassizii*) in California. Herpetologica 42:93-104.

Turner, F.B., K.H. Berry, D.C. Randall, and G.C. White. 1987. Population ecology of the desert tortoise at Goffs, California, 1983-1986. Report to Southern California Edison Co., Rosemead, California.

U.S. Army. 2009. Fort Irwin annual permit report for 2008. Submitted to the Desert Tortoise Recovery Office, Reno, Nevada. Fort Irwin, California.

U.S. Army. 2010. 2009 Annual reports for Fort Irwin biological opinions and desert tortoise permit for the Fort Irwin translocation project. Submitted to the Desert Tortoise Recovery Office, Reno, Nevada. Fort Irwin, California.

U.S. Environmental Protection Agency. 2009. A framework for categorizing the relative vulnerability of Threatened and Endangered species to climate change. EPA/600/R-09/011. National Center for Environmental Assessment, Washington, D.C.

U.S. Fish and Wildlife Service (Service). 1994. Desert tortoise (Mojave population) recovery plan. U.S. Fish and Wildlife Service, Portland, Oregon.

U.S. Fish and Wildlife Service (Service). 2009. Desert tortoise (Mojave population) field manual (*Gopherus agassizii*). Region 8, Sacramento, California. Available on the internet at: http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/

U.S. Fish and Wildlife Service (Service). 2010. Mojave population of the desert tortoise *(Gopherus agassizii),* 5-year review: summary and evaluation. Desert Tortoise Recovery Office, Reno, Nevada. September 30, 2010. Available on the internet at: www.fws.gov/.../five_year_review/doc3572.DT%205Year%20Review_FINAL.pdf

U.S. Fish and Wildlife Service (Service). 2011a. Revised recovery plan for the Mojave population of the desert tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 222 pp.

U.S. Fish and Wildlife Service (Service). 2011b. Health assessment procedures for the desert tortoise (*Gopherus agassizii*): a handbook pertinent to translocation. Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada. 82 pp.

Van Devender, T.R. 2002. The Sonoran desert tortoise. Natural history, biology, and conservation. University of Arizona Press.

Vasek, F. C., H. B. Johnson, and D. H. Eslinger. 1975. Effects of pipeline construction on creosote bush scrub vegetation of the Mojave Desert. Madroño 23:1-13.

Webb, R.H. 2002. Recovery of severely compacted soils in the Mojave Desert, California, USA. Arid Land Research and Management 16: 291-305.

Walde, A., L. Bol, D. Delaney, and L. Pater. 2003. The desert tortoise: a preliminary analysis of operative and environmental temperatures. Unpublished report submitted to the U.S. Fish and Wildlife Service July 25, 2003.

Walde, A.D., A.P. Woodman, and W.I. Boarman. 2008. Desert tortoise surveys and research in the southern and western expansion areas of Fort Irwin. 2008 summary report. ITS Corporation. Unpublished report prepared for the Department of the Army. Fort Irwin, California.

Wallis, I.R., B.T. Henen, and K.A. Nagy. 1999. Egg size and annual egg production by female desert tortoises (*Gopherus agassizii*): the importance of food abundance, body size, and date of egg shelling. Journal of Herpetology 33:394-408.

Weinstein, M., K.H. Berry, and F.B. Turner. 1987. An analysis of habitat relationships of the desert tortoise in California. A report prepared for Southern California Edison Company. 96 pp.

Zimmerman, L.C., M.P. O'Connor, S.J. Kemp, and J.R. Spotila. 1994. Thermal ecology of desert tortoises in the Eastern Mojave Desert: seasonal patterns of operative and body temperatures and microhabitat utilization. Herpetological Monographs 8:45-59.

Personal Communications

Harper, Don. 2011. Cartographer, Fish and Wildlife Service, Las Vegas, Nevada.
Mellison, Chad. 2011. Fish and Wildlife Biologist, Fish and Wildlife Service, Reno, Nevada

This page intended to be blank.

APPENDIX A. DESERT TORTOISE TRANSLOCATION PLAN

This page intended to be blank.

ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

K-Road Moapa Solar Generation Facility

Desert Tortoise Translocation Plan

February 2012

This page intended to be blank.

ARCADIS

Desert Tortoise Translocation Plan

K-Road Moapa Solar Generation Facility

Chad A. Martin, CWB
Principal Biologist

Tara Raabe
Biologist

Prepared for:
K Road Solar, Bureau of Indian Affairs, Bureau of Land Management and the U.S. Fish & Wildlife Service

Prepared by:
ARCADIS-US

Tel: 512-494-1165
Fax: 512-370-3879

Our Ref.:
06923001.0000

Date:
February 2012

This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential and exempt from disclosure under applicable law. Any dissemination, distribution or copying of this document is strictly prohibited.

This page intended to be blank.

1. Introduction **1**

1.1 Purpose and Need 1

1.2 Goals 2

2. Background **2**

2.1 Distribution and Life History of the Mojave Population of Desert Tortoises 2

2.2 Reason for Listing 3

3. Project Area **4**

3.1 Project Description 6

3.2 Translocation Procedure 11

4. Habitat Quality Assessments **12**

4.1 Project Area Habitat Quality 12

4.1.1 Vegetation Assemblages 13

4.1.2 Topography and Soil Suitability 13

4.1.3 Estimated Desert Tortoise Density in the Project Area 16

4.2 Recipient Sites Habitat Quality 18

4.2.1 Primary Recipient Site Habitat Quality 20

4.2.1.1 Estimated Desert Tortoise Density in the Primary Recipient Site 21

4.2.2 Secondary Recipient Site Habitat Quality 23

4.2.2.1 Estimated Desert Tortoise Density in the Secondary Recipient Site 24

4.2.3 Tertiary Recipient Site Habitat Quality 24

4.2.3.1 Estimated Desert Tortoise Density in the Tertiary Recipient Site 26

4.3 Habitat Quality Conclusions 27

5. Translocation Procedures **29**

5.1 Compliance with Plans, Permitting, and Training 30

5.2 Clearance Surveys and Exclusionary Fencing 30

5.3 Desert Tortoise Handling and Transport 33
5.3.1 Burrow Excavation and Artificial Burrows 33
5.3.2 Nest and Egg Handling Protocol 34
5.3.3 Handling Protocol 35
5.3.4 Health Assessments 35
5.3.5 Temporary Quarantine Pens 39
5.3.6 Desert Tortoise Transport and Release 42
5.4 Monitoring 43
6. Translocation Schedule 44
7. Adaptive Management 51
8. Literature Cited 54

List of Tables

Table 1: Project Construction Schedule Estimate (by Phase) 10
Table 2: October 2010 Desert Tortoise Survey Results 17
Table 3: Desert Tortoise Population Estimate on the Project Area 17
Table 4: Desert Tortoise and Sign at Recipient Sites 20
Table 5: Primary Recipient Site Population Estimate Results 23
Table 6: Secondary Recipient Site Population Estimate Results 26
Table 7: Tertiary Recipient Site Population Estimate Results 29
Table 8: Clinical signs that may be observed when conducting physical examinations on desert tortoises in the field**. 36
Table 9: Translocation Schedule 47
Table 10: Contact List 53

List of Figures

Figure 1: Project Location 5

Figure 2: Proposed Project Facilities 7

Figure 3: Proposed Project Construction Phases (1-3) 9

Figure 4: Project Area Desert Tortoise Survey Results (October 2010) 15

Figure 5: Proposed Translocation Recipient Site Locations 19

Figure 6: Primary Recipient Site Survey Results (October 2011) 22

Figure 7: Secondary Recipient Site Survey Results (October 2011) 25

Figure 8: Tertiary Recipient Site Survey Results (October 2011) 28

Figure 9. Desert Tortoise Distribution Map – 6.5 km Max Extent 32

Figure 10: Temporary Quarantine Pens Location 41

Figure 11: Desert Tortoise Translocation Decision Tree 46

ARCADIS

Acronyms Used in the Report

BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
DOT	Department of Transportation
ELISA	Enzyme-linked Immunosorbent Assay
ESA	Endangered Species Act
GPS	Global Positioning System
I-15	Interstate 15
km	kilometer
kV	kilovolt
m	meter
ml	milliliter
mph	miles per hour
MW	Megawatt
NDOW	Nevada Department of Wildlife
O&M	Operations and Maintenance
Project	K Road Moapa Solar Project
PV	Photovoltaic
Reservation	Moapa River Indian Reservation

ROW	Right(s) of Way
SCADA	Supervisory Control and Data Acquisition
Travel Plaza	Moapa Travel Plaza
Tribe	Moapa Band of Paiute Indians
URTD	Upper Respiratory Tract Disease
USFWS	United States Fish and Wildlife Service
UTV	Utility Terrain Vehicle
° F	degrees Fahrenheit

This page intended to be blank.

1. Introduction

The K Road Moapa Solar Generation Project (Project) has been proposed on 2,153 acres of land within the Moapa River Indian Reservation (Reservation) in the Mojave Desert in Clark County, Nevada. K Road Solar (Proponent) will lease land within the Reservation for the construction and operation of a 350 megawatt (MW) photovoltaic (PV) solar generating station and associated infrastructure. Project construction consists of a PV solar generating facility, an operations and maintenance (O&M) area, an up to 500 kilovolt (kV) and 12kV transmission lines, stormwater devices (berms and gabions), water pipeline, perimeter fence, and improvements to an existing utility access road. The primary purpose of the Project is to provide economic development, sustainable renewable resources, new jobs and other benefits for the Moapa Band of Paiute Indians (Tribe) by using the Tribe's solar resources. Project construction is scheduled to begin in the third quarter of 2012 and continue until 2016.

1.1 Purpose and Need

The purpose of this document is to provide direction for the removal of desert tortoises (*Gopherus agassizii*) from harm's way on the Project area during all Project construction. The Project area contains occupied desert tortoise habitat and Project construction activities are likely to have an adverse effect on the desert tortoise, a threatened species under the federal Endangered Species Act (ESA).

Proponents of the Project have consulted with the United States Fish and Wildlife Service (USFWS) under Section 7 of the ESA regarding "incidental take" of desert tortoises in the Project area. Take would occur in the form of harassment, potential mortality, and loss of occupied habitat. Translocation of desert tortoises from within the 2,000 acre solar facility to suitable offsite land (hereafter referred to as recipient sites) within the Reservation has been identified as a key mitigation measure. This translocation plan addresses clearance surveys and translocation procedures applicable to all desert tortoise translocations according to USFWS guidelines (USFWS 2011a), USFWS Desert Tortoise Field Manual (2009), and the USFWS Health Assessment Procedures for the Desert Tortoise (USFWS 2011b). This translocation plan also discusses options that may occur based on timing of construction and other circumstances that may arise. Additional Project documents and recommendations from other completed desert tortoise translocation plans are used in this document.

The key aspect of this translocation plan is that all direction, procedures and selected control and recipient sites will be subject to regulatory agency approval prior to implementation. In addition,

this document is subject to change as new information is generated during the translocation process, with a purpose of increasing the survival of all affected desert tortoises. Therefore, adaptive management will be incorporated.

The 2,000 acre solar facility will be fenced to preclude additional desert tortoise access, and the resident desert tortoise population within the solar facility will be translocated to recipient sites on the Reservation that provide suitable habitat to support both translocated tortoises and the recipient site resident tortoises. Health assessments will be performed on all affected desert tortoises, both from the Project area and within recipient sites, to minimize any increase and/or monitor disease prevalence among the populations.

Subject to agency approval, this translocation plan provides details required to successfully translocate all desert tortoises found within the 2,000 acre solar facility. Monitoring all translocated desert tortoises as well as recipient site and control site resident desert tortoises will occur for at least five (5) years after the translocation has occurred. Coordination with USFWS upon the five year monitoring period is required to determine if additional monitoring is necessary. Recipient and control site resident desert tortoises are monitored to assess any impacts on the translocated and resident tortoises, and if adaptive management is needed to be implemented in a timely manner.

1.2 Goals

The primary goals of the Project Translocation Plan are stated below.

- Translocate all desert tortoises from the 2,000 acre solar facility to selected suitable recipient sites within the Reservation.
- Minimize stress and other harmful effects on all translocated desert tortoises.
- Minimize impact on resident desert tortoise populations on selected recipient sites.
- Evaluate the success of the translocation through a five year monitoring program after implementation.

2. Background

2.1 Distribution and Life History of the Mojave Population of Desert Tortoises

The Mojave population of the desert tortoise (all tortoises north and west of the Colorado River in Arizona, Utah, Nevada, and California) was listed as threatened under the ESA on April 2, 1990.

The desert tortoise has a domed carapace and a relatively flat, unhinged plastron. Adults will reach a carapace length of 8 to 15 inches and shell height of 4 to 6 inches. Adults typically weigh 8 to 15 pounds. When hatchlings emerge from their eggs, they are approximately 2 inches long (Ernst et al. 1994). The desert tortoise is greenish-gray to dark brown with tan scute centers. Forelimbs are heavy, with conical scales, and are flattened for digging and burrowing. Hind limbs are more elephantine. When limbs pull in, they block the openings of the shell (Ernst et al. 1994).

The Mojave desert tortoise population is typically found in habitat associated with communities dominated by creosote bush (*Larrea tridentata*), often with other shrubs such as white bursage (*Ambrosia dumosa*) or saltbush (*Atriplex* spp.) occurring as co-dominants with small cacti present (AGFD 2001). Soil is typically sandy loam or rocky soils in valleys, bajadas, and hills which is adequate for burrow excavation. Burrows are occupied to avoid extreme hot or cold temperatures for body temperature regulation (AGFD 2001). Desert tortoises are primarily herbivores, consuming a wide variety of plant materials including dicot annuals, grasses, herbaceous perennials, trees, shrubs, subshrubs/woody vines, and succulent plants (AGFD 2001). A study of their food habits in the Mojave Desert (Jennings 1997) found that they used 43 plant species, including 37 annuals and 6 perennials. Some of the preferred plants were dwarf white milkvetch (*Astragulus didymocarpus*), widow's milkvetch (*A. layneae*), Booth evening primrose (*Camissonia boothii*), rattlesnake weed (*Camissonia* [*Euphorbia*] *albomarginata*), foothill deervetch (*Lotus humistratus*), Bigelow four o'clock (*Mirabilis bigelovii*), and brightwhite (*Prenanthella exigua*) (Jennings 1997).

The annual cycle of the Mojave population begins in February or March when they emerge from hibernation (AGFD 2001). Mating generally takes place in the spring, and 2 to 14 eggs are laid in an excavated nest near a shrub or burrow entrance between May and July (Lawler, no date). Young tortoises emerge from the eggs after incubating for 70 to 135 days (Lawler, no date). Hatchling and juvenile mortalities are very high; it has been estimated that only one hatchling for every 15 to 20 nests will survive to reach sexual maturity (Lawler, no date). Average age of sexual maturity of females is primarily a function of animal size, but is usually between the ages of 12 and 25 years. Members of the Mojave population produce from one to three clutches of eggs per year, but the total number of eggs laid may be similar to the single larger clutch produced by Sonoran population tortoises (Lawler, no date).

2.2 Reason for Listing

Several threats to desert tortoises have caused a decrease in populations. The most serious problem facing the Mojave population is the cumulative effects of human and disease-related mortality

accompanied by habitat destruction, degredation, and fragmentation (USFWS 1994). Humans will collect desert tortoises for food, pets, commercial trade, and medicinal uses. Off-road vehicles can strike and kill tortoises as well. Predation is another key threat. Hatchlings and juveniles are preyed upon by reptiles, birds, and mammals, as well as domestic and feral dogs. Raven predation has significantly increased because food and water supply, and nesting and perching structures have become more available due to human development. This allows ravens to become habituated to these areas. Disease has been noted as a factor since 1990. An upper respiratory tract disease (URTD) has been discovered and is currently a major cause of mortality in the western Mojave Desert population. Predisposing factors, such as habitat degradation, poor nutrition, and drought, has only served to compound the problem (USFWS 1994).

Because of the decrease in the Mojave desert tortoise population, USFWS determined the population was threatened and listed under the ESA. Conservation strategies have been developed to protect the species such as land acquisitions, installing protective fencing, retiring grazing allotments, limiting off-highway vehicle access, and implementing restoration projects (USFWS 1994). In cases where individuals and/or habitat will be impacted, a translocation plan can be developed and approved by USFWS to translocate individuals to nearby areas with suitable habitat. USFWS has developed protocols and guidelines for survey methodology. Section 5 of this document discusses a desert tortoise translocation plan for the K Road Moapa Solar Project.

3. Project Area

The Project is located in Clark County, Nevada which extends over 8,091 square miles with Lincoln County, Nevada to the north, the Arizona state line to the east, and the Colorado River, including the Hoover Dam and Lake Mead, to the southeast, and Nye County, Nevada to the west (Figure 1). Clark County is located in the Mojave Desert, which is a transitional desert between the hot Sonoran Desert to the south and the cold Great Basin Desert to the north. The Reservation consists of 71,954 acres of land located northeast of Las Vegas. Moapa Valley is the prehistoric flood plain of the Muddy River, which flows through the valley and eventually drains into Lake Mead.

Source: USGS 7.5 Topographic Map

ARCADIS	K Road Power San Diego, California K Road Moapa Solar Facility	Moapa River Indian Reservation Project Location Map	January 2012 FIGURE 1

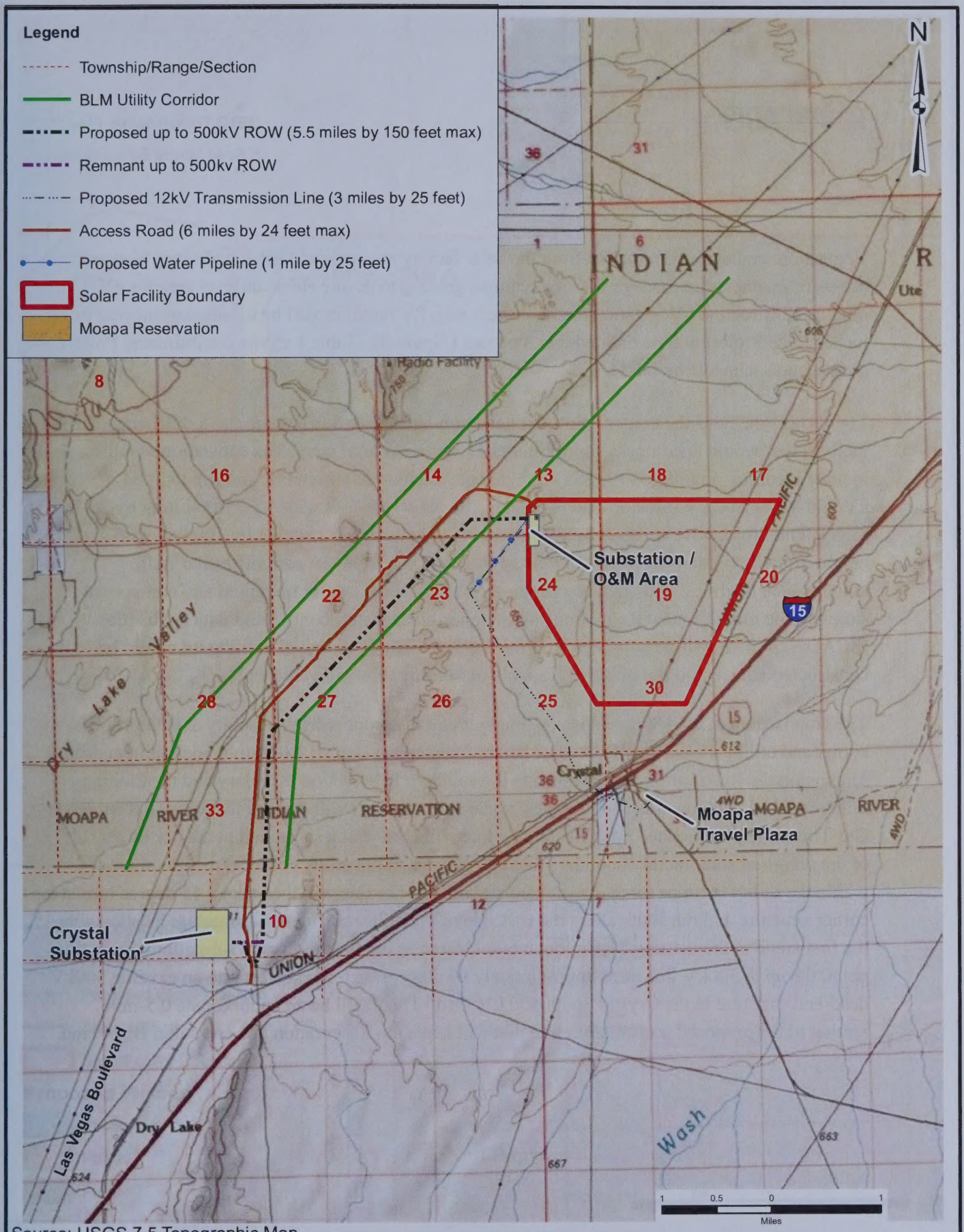
Map Document:Austin/6923001/GIS/MXD/BLM Lands Figure 1

The Project is located in the Basin and Range Physiographic Province in the north central portion of the Mojave Desert. Basin and Range structure is characterized by rather abrupt mountain ranges, generally of moderate height, that consist primarily of exposed bedrock that is deeply cut by ravines and is surrounded by aprons of pediments and/or low-profile bajada slopes, which drain into often wide valleys to interior closed basins. This interior drainage with no outlets results in the formation of evaporite playa lakes, such as Dry Lake south of the Project, in the valley bottoms (Benson and Darrow 1981; Longwell et al. 1965).

The general ecological setting of the Project is consistent with Mojave Desert scrub. The area is dominated by open stands of creosote bush and white bursage. Desert saltbush scrub habitat and cactus-yucca scrub are also present and concentrated within the ephemeral washes. Cacti species observed during the biological surveys were the barrel cactus (*Ferocactus acanthodes*), beavertail cactus (*Opuntia basilaris*), cottontop cactus (*Echinocactus polycephalus*), hedgehog cactus (*Echinocereus engelmanii var. chrysocentrus.*), pencil cholla (*Opuntia ramosissima*), silver cholla (*Opuntia echinocarpa*) and teddybear cholla (*Opuntia bigelovii*). Arabian grass (*Schismus arabicus*), snakeweed (*Gutierrezia sp.*), desert trumpet (*Eriogonum inflatum*), catclaw (*Acacia greggii)* and winged saltbush (*Atriplex canescens*) were also identified.

3.1 Project Description

Translocation will only apply to tortoises within the proposed solar facility. The Project facilities would disturb an approximate total area of 2,153 acres of the Reservation (Figure 2). The solar arrays, substation, and operations building and parking would be contained within a 2,000 acre solar facility footprint; the up to 500kV transmission line corridor would impact approximately 100 acres and have a length of approximately 5.5 miles; the water line would impact approximately 3 acres and have a length of approximately 1 mile; the 12kV transmission line would impact approximately 12 acres of land, half of which is currently an unimproved road, and have a length of approximately 3 miles. Tortoises found within the transmission line corridors and water line will be moved out of harm's way in accordance with the Biological Opinion and not included in the translocation effort for tortoises found in the proposed solar facility. The Project location allows efficient connection of the energy from solar resources to existing transmission infrastructure. The selected site is adjacent to an existing transmission corridor that has a direct path to the Crystal substation. The Crystal substation itself lies within 5 miles of the Project's northwest boundary.



Source: USGS 7.5 Topographic Map

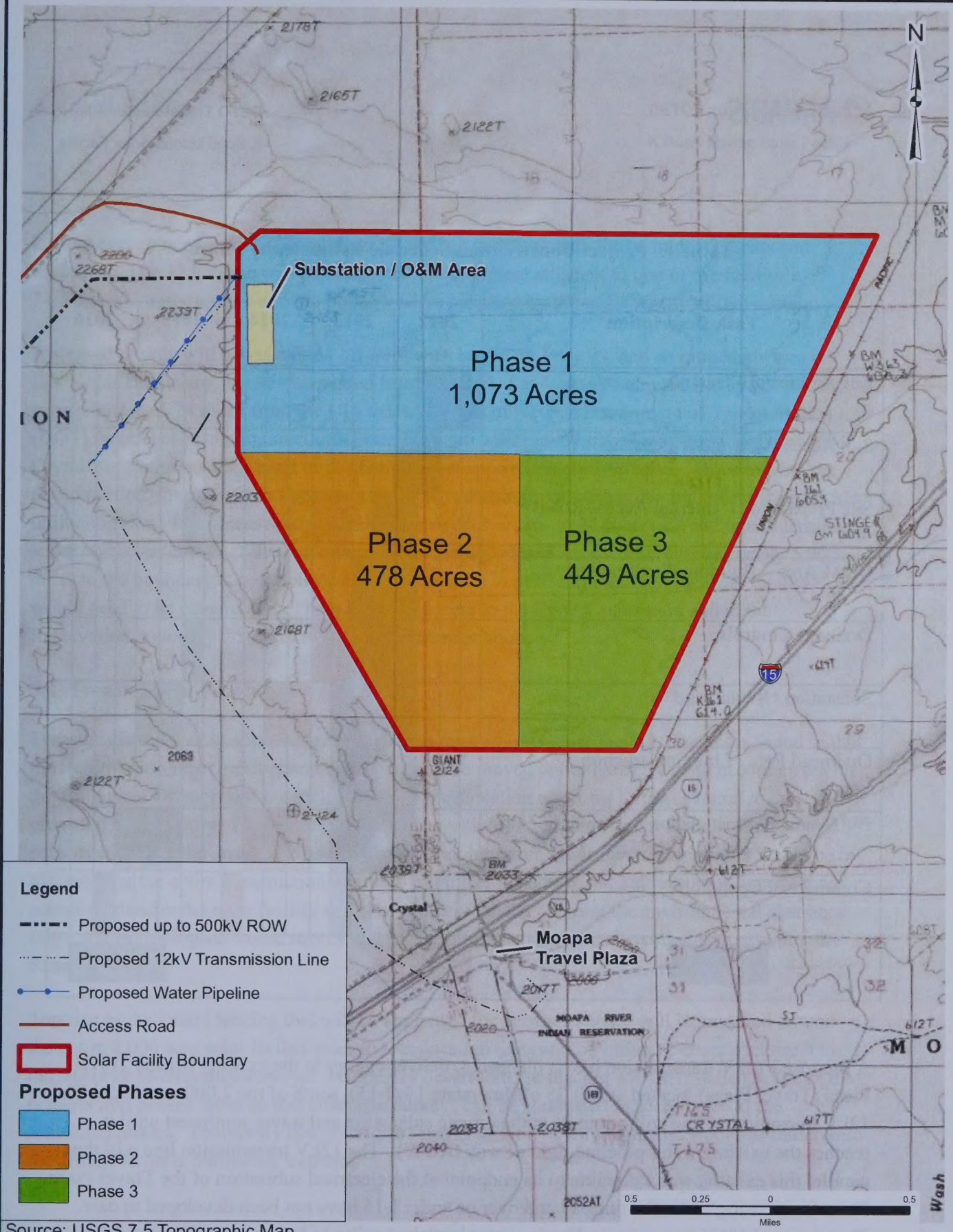
ARCADIS	K Road Power San Diego, California K Road Moapa Solar Facility	Moapa River Indian Reservation Proposed Project Facilities Map	February 2012 FIGURE 2

Map Document:Austin\69230001\GIS\MXD\BLM Lands Figure 1

Vegetation would not be removed from the solar facility area unless it is located along planned access or maintenance roads or the area requires grading to ensure stable or level area for PV module construction. Vegetation that interferes with PV modules will be trimmed or mowed to 12 inches. The Project will be divided into 3 phases (Figure 3). Table 1 shows the estimated Project construction schedule by phase.

The Project includes the construction of one (1) on-site substation (within the 2,000 acre solar facility) that would encompass approximately 15 acres in total area. The substation would include medium- and high-voltage switchgear and conductor structures, and (up to 3) 34.5 kV/230 kV or 500 kV transformers (each approximately 50-foot wide by 25-foot long by 20-foot high). The Project O&M area would contain an O&M building 100 feet by 100 feet with a height of approximately 15 feet. The O&M building would house administrative staff, maintenance facilities, and ancillary support systems such as water treatment and component storage. The main Control Room housing the main supervisory control and data acquisition (SCADA) system will be housed within the O&M building. A gravel parking lot would be constructed adjacent to the building, capable of holding up to 50 vehicles.

The proposed up to 500kV transmission line will exit the proposed solar facility at the northwest corner and utilize the existing Bureau of Land Management (BLM) 4,000-foot wide utility corridor running on the Reservation for 5.0 miles to the southern Reservation boundary and then for 0.5 miles on BLM land towards and into the Crystal substation. It will parallel the existing Kern River Gas Transmission pipeline. Specifically, the line will initiate at a substation at the northwest side of the proposed solar facility boundary and extend west to the utility corridor, then southwest within the utility corridor for approximately 2.7 miles. The line will then take a 45-degree turn at a corner structure and run south along the east side of the utility corridor to a structure location near the first angle in the existing McCullough 500 kV line as it exits the Crystal substation. From this point, the up to 500kV line turns approximately 90 degrees, extending west into an existing 500kV dead-end structure in the Crystal South 500 kV yard. There will be an approximate 0.5-mile section of the proposed transmission line that will leave the Reservation and cross into BLM land.

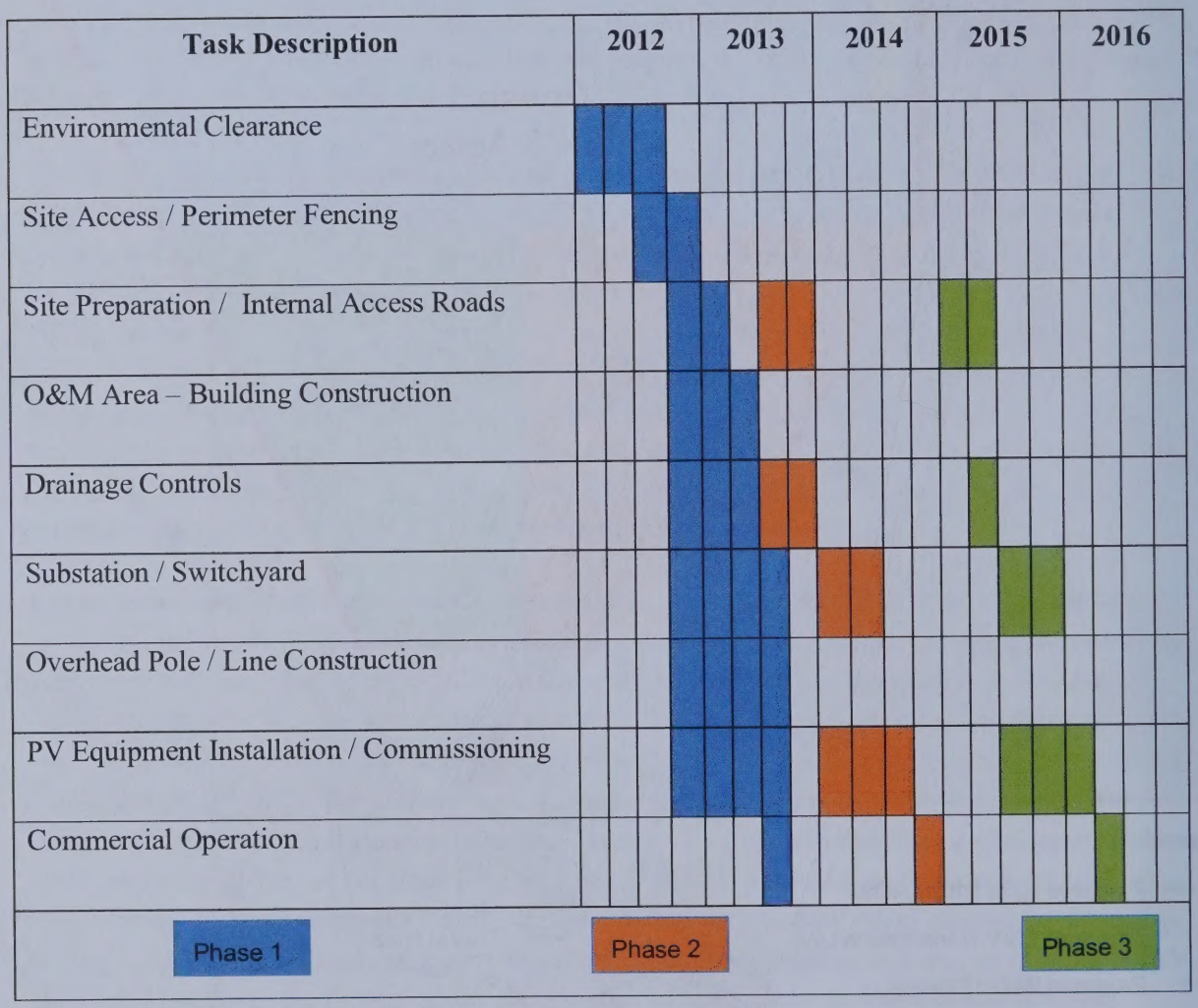


Source: USGS 7.5 Topographic Map

ARCADIS	K Road Power San Diego, California K Road Moapa Solar Facility	Moapa River Indian Reservation Proposed Project Construction Phases (1-3)	January 2012 FIGURE 3

Map Document:Austin\69230001\GIS\MXD\EIS\Figure 2-9

Table 1: Project Construction Schedule Estimate (by Phase)



A proposed 12kV transmission line is planned to deliver energy to the existing Moapa Travel Plaza (Travel Plaza) located at exit 75 off Interstate 15 (I-15), south of the 2,000-acre area. The 12kV transmission line will originate at the on-site substation and travel southwest until it reaches the existing water pipeline right of way (ROW). The 12kV transmission line will then parallel this existing water pipeline to its endpoint at the electrical substation of the Travel Plaza. Plans for crossing under the railroad and over or under I-15 have not been developed to date. The proposed 12kV transmission line is approximately 3 miles in length and will meet the

current energy needs of the Travel Plaza as well as accommodate future improvements and additions. The 12 kV line will be connected to equipment adjacent to one of the facility's 34.5/500 kV transformers and the power will be supplied by the utility entity of that system.

Access to the site will be via exit 64 off I-15, west bound on Hwy 93, and an immediate turn on Las Vegas Boulevard, a state maintained frontage road. Las Vegas Boulevard is well paved for approximately 5.74 miles from the I-15 exit to the end of Nevada Department of Transportation (DOT) maintenance and jurisdiction. From there, an unimproved paved road continues towards the Crystal substation to a left hand or northerly turn at approximately 1.96 miles. Once leaving the paved portion, the access road becomes an improved utility road within the 4,000-foot wide BLM utility corridor. The access road would be improved from 16- to 24-foot wide and would terminate at the northwest corner of the Project area solar facility. The access road is approximately 5.90 miles to the boundary access point where an improved ½ mile entrance onto the solar facility would need to be constructed. There is public access to the Crystal substation and to the Reservation boundary 0.5 miles north of Crystal substation.

3.2 Translocation Procedure

Translocation will only apply to tortoises within the proposed solar facility. Tortoises found within the transmission line corridors and water line will be moved out of harm's way in accordance with the Biological Opinion and not included in the translocation effort for tortoises found in the proposed solar facility. Environmental clearance activities including desert tortoise surveys will be performed before the onset of Phase 1 construction; however, environmental monitors would be in place during the entire construction period to minimize impacts to natural resources, focusing on access roads after the solar facility site is completely fenced. During the environmental clearance stage, trained biologists would survey and translocate desert tortoises to recipient sites within the Reservation.

Tortoise exclusionary fencing that will be applied to the perimeter fence will be installed around the entire 2,000 acre solar facility prior to translocation to ensure no influx of desert tortoise into the site prior to clearance surveys. Temporary desert tortoise fencing will be installed between the construction phased areas so that clearance surveys can be conducted in accordance to the scheduled phases. Temporary desert tortoise fencing will be of wire cloth and would be buried into the ground to deter burrowing tortoises.

Following the environmental clearance for the access road and completion of either partial or full desert tortoise fencing of the solar facility, the activities to upgrade the road and prepare the laydown area (parking, O&M area, and substation) will begin.

During construction of the waterline, 12kV transmission line, up to 500kV transmission line, and the access road, all desert tortoises that are encountered will be moved out of the construction ROW, not translocated. A permit from the Nevada Department of Wildlife (NDOW) will be obtained for portions of the Project solely on BLM lands (0.5 miles).

During all activities on the Project area (including construction, translocation, and recipient sites), trash and other forms of litter will be properly disposed to reduce the potential of desert tortoise predators being attracted to the area. Section 5 describes translocation procedures in more detail.

4. Habitat Quality Assessments

Habitat quality assessments of the solar facility, recipient sites, and the control site are important for translocation of desert tortoises. Identification of habitat quality within the solar facility is essential so that translocation recipient sites can have similar qualities to which desert tortoises select for. Field surveys were conducted in the Project area using the USFWS (2011a) guidance in October 2010 to assess desert tortoise populations and habitat characteristics. In October 2011, field surveys were conducted at three potential recipient and control sites on the Reservation to assess resident desert tortoise populations and suitable habitat for translocation. Results for each of these field surveys are discussed below. Additional habitat quality surveys of the Project area and recipient sites will be conducted in spring 2012 and appended to this document. Specific studies will include quadrant vegetation quality and quantity analysis on the solar facility, primary recipient site and the secondary recipient site north of the solar facility.

4.1 Project Area Habitat Quality

Project area habitat quality is based upon factors such as observed density of resident tortoises and/or desert tortoise sign including burrows, scat (an indicator of habitat quality), and carcasses. Observed vegetation cover and forage quality, presence of native and non-native vegetation, level of disturbance (grazing, agriculture, and roads), soil composition, and topography were assessed to determine habitat quality.

4.1.1 Vegetation Assemblages

The Project area is composed of an assemblage of open stands of creosote bush, white bursage and winged saltbush. During field surveys in October 2010, herbaceous species such as snakeweed, desert trumpet, desertgrass, and Arabian grass were identified in the Project area, as well as several cacti species (barrel, beavertail, cottontop, and hedgehog cacti, and pencil, silver, and teddybear cholla). Esque (1994) found that desert tortoises will eat a wide variety of herbaceous vegetation, particularly grasses and flowers of flowering plants during activity periods. Along with herbaceous vegetation, tortoises will eat the new growth of cacti species, especially the fruits and flowers. Beavertail cactus, documented in the Project area, is commonly foraged upon (USFWS 2011c, DesertUSA 2012). Two common non-native species foraged upon are red brome (*Bromus rubens*) and red-stem filaree (*Erodium cicutarium*) (USFWS 2011c).

In a study on food habits by Jennings (1997), the most preferred forage species were found along washes and consisted of annuals. In the October 2010 survey of the Project area, the majority of desert tortoise sign (sighting, carcass, tracks, and scat) were documented along ephemeral washes, indicating a potential for high forage quality along these washes. There was an abundance of cacti species and Arabian grass, which is also a common forage species, throughout the Project area (Spangenberg 1995, Jennings 1997). Preferred forage type tends to fluctuate with the amount of rainfall. With sufficient winter rainfall, annuals will germinate and be heavily available during tortoise activity periods. If there is little to no rainfall, preferred forage will shift to drier plants such as grasses and shrubs (Spangenberg 1995, Desert USA 2012).

Shrubs provide tortoises shelter from temperature extremes and predators, especially for juveniles (USFWS 2011c). Common shrubs in this area were winged saltbush, creosote bush, and white bursage. During field surveys, burrows that were documented in open areas with suitable soil tended to be located beneath shrubs. Therefore, the presence of shrubs throughout the Project area is important for desert tortoise shelter sites. Based upon the observed vegetation on the Project area during the October 2010 survey and documented desert tortoise sign, the Project area has good quality forage available to support desert tortoises.

4.1.2 Topography and Soil Suitability

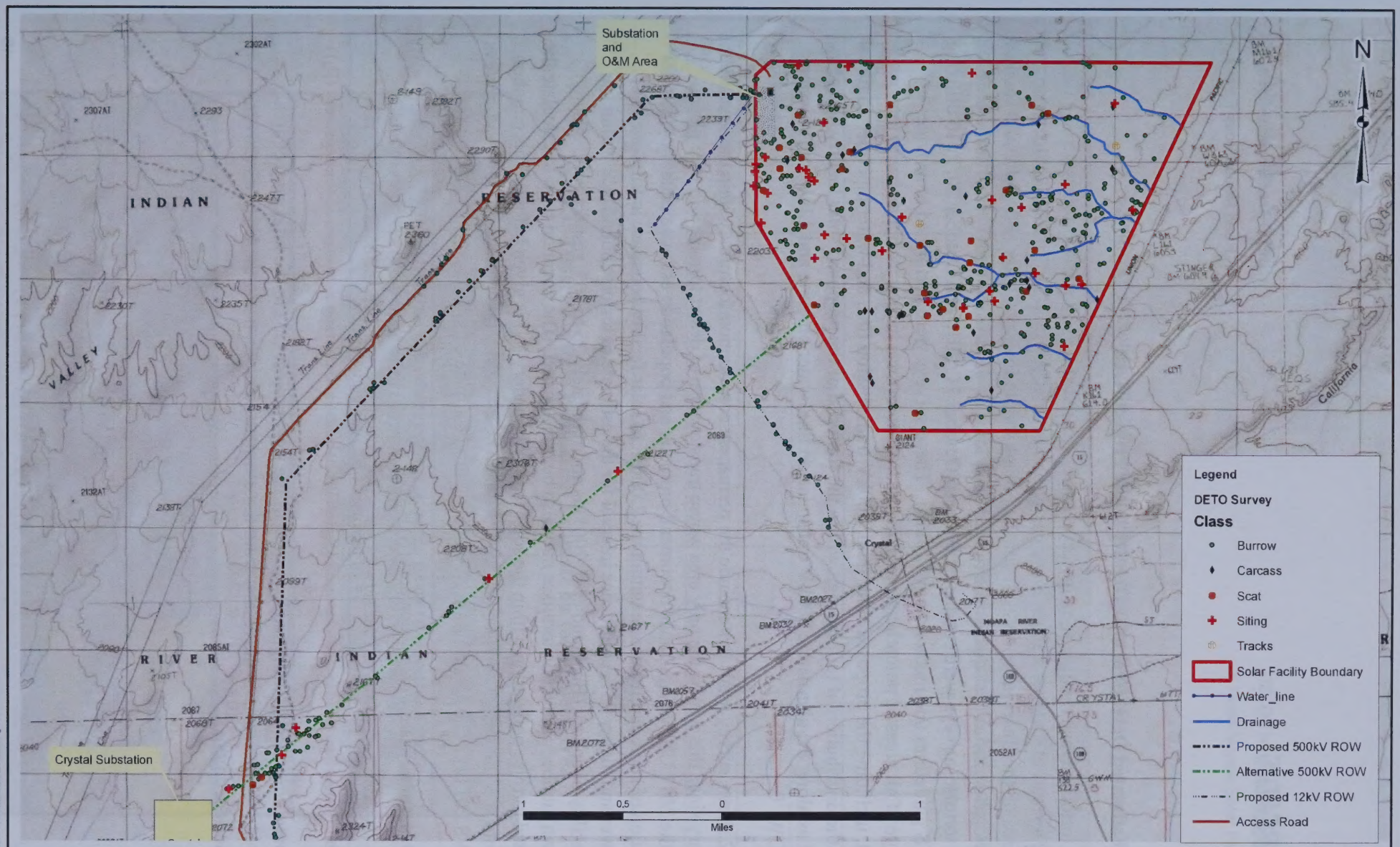
Desert tortoises occur primarily on flats and bajadas with soils ranging from sand to sandy-gravel, characterized by scattered shrubs and abundant inter-space for growth of herbaceous plants. They occur in creosote bush, alkali sink, and tree-yucca habitats in valleys, on alluvial fans, and in low rolling hills at elevations ranging from sea level to 5,000 feet (USFWS 2011c).

They appear to prefer bajadas and desert washes where soils range from sandy-loam to light gravel-clay that is soft enough for digging, but firm enough so that burrows do not collapse (USFWS 1994).

Shelter sites often occur on lower bajadas and basins in burrows dug in soil, cavities in sides of washes, and depressions under shrubs. In areas where soil is unsuitable for digging, caliche caves will be used in place of burrows (Bury et al. 1994). Desert tortoises tend to favor washes and hillsides because soil tends to be optimal for burrow construction (Desert USA 2012), as well as preferred forage are usually available in these areas.

Surveys of the Project area conducted in October 2010 identified desert tortoises and desert tortoise sign concentrated along ephemeral drainages from east to west (Figure 4). Desert tortoises were also identified in the northwest portion of the solar facility where the substation and O&M area is planned for construction. These areas have sandy-loam to light gravel-clay which is ideal for burrow construction (USFWS 1994). The drainages are observed to be corridors allowing desert tortoises to move through the Project area, while supplying forage availability and suitable areas for burrow construction. Caliche caves were also observed along washes and hillsides.

Surveyed Project areas where desert tortoises and desert tortoise sign were not observed, typically exhibited soils abundant with caliche-coated rocks, which were not suitable for burrow construction. Vegetation in these areas was either absent, or vegetation species were not consistent with desert tortoise diet such as few to no cacti species. According to field surveys conducted in 2010, these areas included the southwestern portion and north central portion of the Project area (Figure 4).



Map Document: Austin\6923001\GIS\MXD\BLM Lands Figure 1

MALCOLM PIRNIE

K Road Power
San Diego, California

K Road Moapa Solar Project

Moapa River Indian Reservation

Desert Tortoise Survey Results (October 2010 & 2011)

MALCOLM PIRNIE, INC.

January 2012

FIGURE 4

4.1.3 Estimated Desert Tortoise Density in the Project Area

Desert tortoise density within the Project area is estimated at 8 to 32 adult tortoises per square mile as a result of October 2010 surveys performed by ARCADIS-US. Surveys conducted in the same area on the Reservation in 2001 for the Moapa Paiute Energy Center (PBS&J 2001) found that tortoise densities per square mile ranged from low (10-45) to very high (+140) at the time. Desert tortoise surveys were conducted between October 11, 2010 and October 20, 2010 utilizing USFWS guidelines and methodology (2011a). These surveys were performed to provide coverage of all areas of potential ground disturbance in tortoise habitat associated with the Project, including the proposed solar field, 500kV transmission line, and water pipeline. Figure 4 shows the distribution of tortoise sign within the footprint of the proposed solar facility boundary as well as along the alternative 500kV transmission line, water pipeline and 12kV transmission line ROW.

Table 2 shows survey totals that include the permanent construction footprint within the solar field boundary since this will be the only area where translocation of desert tortoise will take place. Using the 2011 USFWS guidance document, protocol, and population estimate equation, the total population of adult desert tortoise within the 2,000 acre solar facility boundary is fifty-one (51). The lower and higher 95% confidence interval for the estimate of tortoise abundance within the solar facility boundary (Buckland et al. 2001) is approximately 25 to 103, respectively. An unknown number of juvenile tortoises may also be translocated. The equation used to calculate the estimated tortoise population within the solar facility boundary (N) is given below. This equation takes into account desert tortoises that may not have been seen by the observer during field surveys (USFWS 2011a). The generic form of the population estimate equation is:

$$\text{Estimated \# of tortoises within action area (N)} = \frac{\text{\# of tortoises observed aboveground}}{(\text{Probability that a tortoise is aboveground } (P_a)) * (\text{Probability of detecting a tortoise, if aboveground } (P_d))}$$

The above equation is multiplied by a ratio of the total project area to the total project area surveyed. Table 3 shows the results from the estimate equation using the USFWS (2011a) guidance document.

Table 2: October 2010 Desert Tortoise Survey Results

	Proposed Solar Facility	Transmission Line ROWs	Water Pipeline ROW	12kV Transmission Line
Total burrows (class 1-3)	458	56	2	37
Total carcasses	25	1	0	0
Total scat	26	2	0	0
Total tracks	2	0	0	0
Total live tortoises*	26	5	0	0
Total live juveniles	8	N/A	N/A	0

*Adults >160mm carapace

Table 3: Desert Tortoise Population Estimate on the Project Area

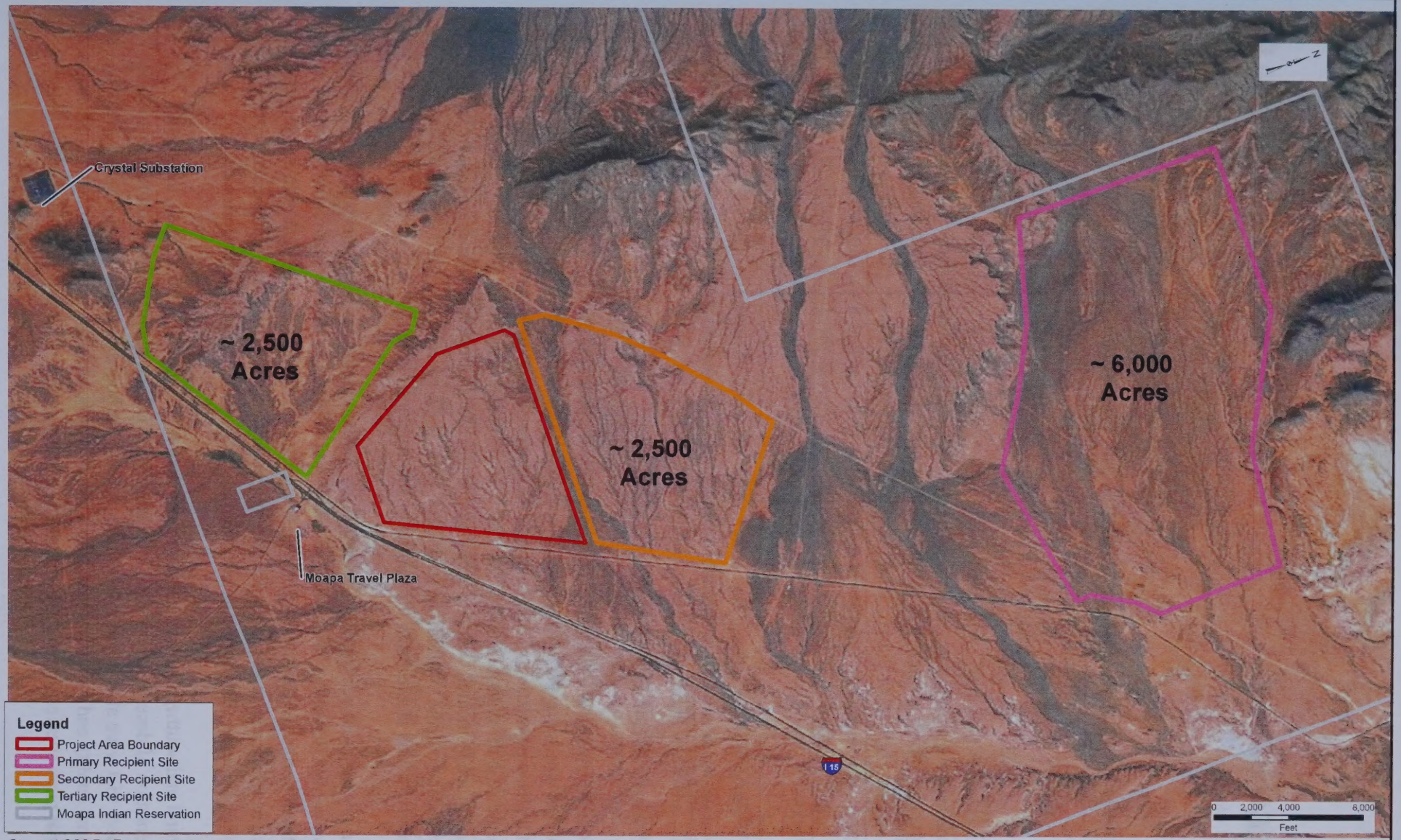
Table 3. USFWS Desert Tortoise Pre-Project Survey Guidance What is the estimated number of tortoises and associated 95% confidence interval for the action area?	
INSTRUCTIONS *Use this tab when your transects were of unequal length.* *Enter the appropriate values from the survey into the yellow cells below. The number of tortoises and assocated 95% confidence interval for the action area will be calculated.*	
N =	51.3
Lower 95%CI =	25.53
Upper 95%CI =	102.90
Total action area (acres)	2000
Prob that a tort is above ground given winter rainfall (Pa from Table 2) =	0.800
Total length of transects walked (km) =	815
Number of transects walked =	312
Number of tortoises found during surveys (n) =	26

4.2 Recipient Sites Habitat Quality

Recipient sites were selected following USFWS guidelines (2011a) for selecting recipient sites for desert tortoise translocations. All selected recipient sites will be approved by USFWS before implementation of the translocation plan. Recipient site requirements consist of (1) presence of desert tortoise habitat suitable for all age classes, (2) disease is not common within the resident tortoise population, (3) the site occurs on lands where desert tortoise populations have been depleted or extirpated yet still support suitable habitat, and (4) the recipient site will be managed for conservation so that potential threats from future impacts are precluded (USFWS 2011a).

Three potential recipient sites were surveyed in October 2011 using the same USFWS (2011a) protocol used to survey the Project area. A 6,000 acre potential recipient site approximately 4.5 miles north of the Project area was surveyed from October 2, 2011 to October 8, 2011. A second survey was conducted from October 24, 2011 to October 28, 2011 on an additional 5,000 acres (2,500 acres north and south of the Project area adjacent to I-15) for potential recipient sites if needed.

USFWS (2011a) requires that a control site be used in the translocation program to monitor progress of the translocated desert tortoises on the recipient sites. The control site shall be similar in habitat type/quality, desert tortoise population size/structure, and disease status to the recipient sites (USFWS 2011a). Of the three potential recipient sites surveyed on the Reservation, the 6,000 acre site will be the primary recipient site. The additional 5,000 acres surveyed north and south of the Project area will be referred to as the secondary and tertiary recipient sites, respectively. However, the tertiary recipient site appears to have better habitat quality and approximately the same number of desert tortoises were documented at this location as the primary recipient site; therefore, this area may potentially be selected as the control site for the Translocation Plan. Figure 5 shows the relative locations of these recipient sites to the Project area and Table 4 displays desert tortoise and desert tortoise sign documented at each recipient site during field surveys.



Source: USGS 7.5 Topographic Map

ARCADIS	K Road Power San Diego, California KRoad Moapa Solar Project	Moapa River Indian Reservation Proposed Translocation Recipient Site Locations	January 2012 FIGURE 5

Map Document: (S:\GIS_Resources\Standards_Guidelines\Map Templates\GIS_TEMPLATES_2005\11x17_Landscape.mxt)
7/19/2005 -- 5:27:24 PM

Table 4: Desert Tortoise and Sign at Recipient Sites

	Primary Recipient Site (6,000 acres)	Secondary Recipient Site (2,500 acres)	Tertiary Recipient Site (2,500 acres)
Total burrows (class 1-3)	428	263	320
Total carcasses	14	10	4
Total scat	1	1	0
Total tracks	0	0	0
Total live tortoises*	6	2	4

*Adults >160mm carapace

4.2.1 Primary Recipient Site Habitat Quality

The primary recipient site is located approximately 4.5 miles north of the Project area. It is a 6,000 acre site that was surveyed in October 2011 to identify suitable habitat quality and estimate the resident tortoise population. This recipient site is consistent with Mojave Desert creosote bush scrub vegetation throughout most of the site. There are interspersed unvegetated areas on the site that were typically located on steep rocky slopes and cliffs along the major drainages or large expanses of flat caliche. Within the drainages, grass, forb species, and cacti are scattered sporadically, which is similar to the habitat of the drainages in the Project area.

The primary recipient site had fair desert tortoise habitat quality in the northern half of the site based on burrow density. Caliche-coated rocks, and hard desert pavement covered the majority of the northern portion of the site. Vegetation was either absent or not consistent with desert tortoise diet such as a lack of cacti species. Patches of good quality habitat were interspersed within this fair habitat; however may not be large enough to continually support desert tortoises.

The central and southern portion had more vegetation present along the washes, including documentation of desert tortoise sign, indicating good habitat quality. Common forage species found here that were also found in the Project area were beavertail cactus and Arabian grass. Additional quality and quantity vegetation surveys will be conducted in spring 2012 to determine additional plant species that are present on the primary recipient site and are suitable for desert

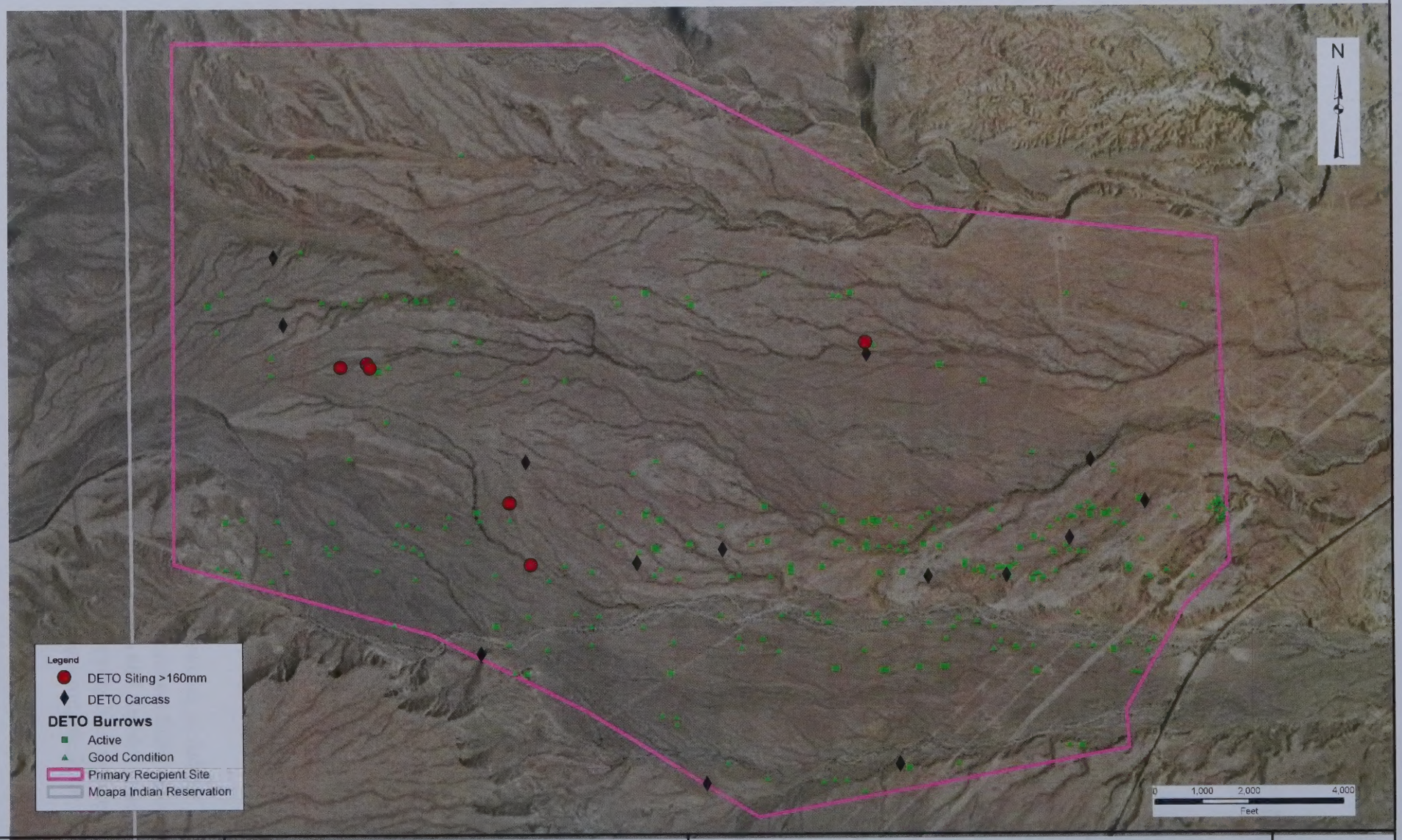
tortoise forage. A comparison can then be made between the Project area and recipient site for inclusion and management of the Disposition Plan.

4.2.1.1 Estimated Desert Tortoise Density in the Primary Recipient Site

Figure 6 shows the distribution of desert tortoise observations and sign. No desert tortoises and three burrows were documented in the northern portion of the primary recipient site. This area had large expanses of flat caliche-coated rocks and steep rocky slopes that made burrow excavation difficult. A total of six desert tortoise observations occurred in the central to southern portion of the site. These observations were within two centrally located drainages which traverse the area from west to east. Fourteen carcasses along with scattered burrows were documented in the drainages and the area of the site south of the drainages.

The drainages where observations and signs were documented had suitable soil for burrow construction. Caliche caves were documented along these drainages, which desert tortoises will utilize in place of burrows (Bury et al. 1994). Available forage was also present to sustain resident tortoises, or tortoises that may be utilizing the drainages as corridors to traverse the site. Favorable habitat was observed to be contiguous throughout these drainages. Overall, the central and southern portions of the primary recipient site exhibited good habitat quality and more similarity to the Project area than the northern portion.

Application of the 2011 USFWS guidance population estimate equation, indicates approximately eighteen (18) desert tortoises are present within the primary recipient site at the time of survey. Ninety-five percent confidence intervals indicate that as few as 7 tortoises and as many as 43 tortoises could potentially be present on the site. Table 5 shows the results from the estimate equation taken from the USFWS guidance (2011a).



ARCADIS

K Road Power
San Diego, California
KRoad Moapa Solar Project

Moapa River Indian Reservation
Primary Recipient Site Survey Results (October 2011)

January 2012
FIGURE 6

Map Document: (S:\GIS_Resources\Standards_Guidelines\Map Templates\GIS_TEMPLATES_2005\11x17_Landscape.mxd)
7/19/2005 -- 5:27:24 PM

Table 5: Primary Recipient Site Population Estimate Results

Table 3. USFWS Desert Tortoise Pre-Project Survey Guidance What is the estimated number of tortoises and associated 95% confidence interval for the action area?	
INSTRUCTIONS ***Use this tab when your transects were of unequal length.*** *Enter the appropriate values from the survey into the yellow cells below. The number of tortoises and assocated 95% confidence interval for the action area will be calculated.*	
N =	**18.7**
Lower 95%CI =	**7.99**
Upper 95%CI =	**43.78**
Total action area (acres)	**6000**
Prob that a tort is above ground given winter rainfall (Pa from Table 2) =	**0.800**
Total length of transects walked (km) =	**1288**
Number of transects walked =	**500**
Number of tortoises found during surveys (n) =	**5**

4.2.2 Secondary Recipient Site Habitat Quality

The secondary recipient site is a 2,500 acre site north and directly adjacent to the 2,000 acre solar facility. Surveys were conducted at this recipient site in October 2011. The habitat quality of this site is similar to that of the primary 6,000 acre recipient site. Mojave Desert creosote bush scrub was consistent throughout the site with periodic unvegetated areas. A major drainage is present in the central portion of this recipient site. Unsuitable soil with a top layer composed of caliche covered a large portion of the site.

Few cacti species were found here than in the Project area and primary recipient site. However, species that were documented were similar to those of the Project area. Good habitat quality was located in the southern portion of the site along an ephemeral drainage that extended from east to west. The majority of desert tortoise sign was documented along this drainage, as well as all observations. This indicates that good habitat quality was located in this area. Additional habitat

surveys will be conducted in spring of 2012 to identify plant species of this area, as well as suitable forage species for desert tortoises.

4.2.2.1 Estimated Desert Tortoise Density in the Secondary Recipient Site

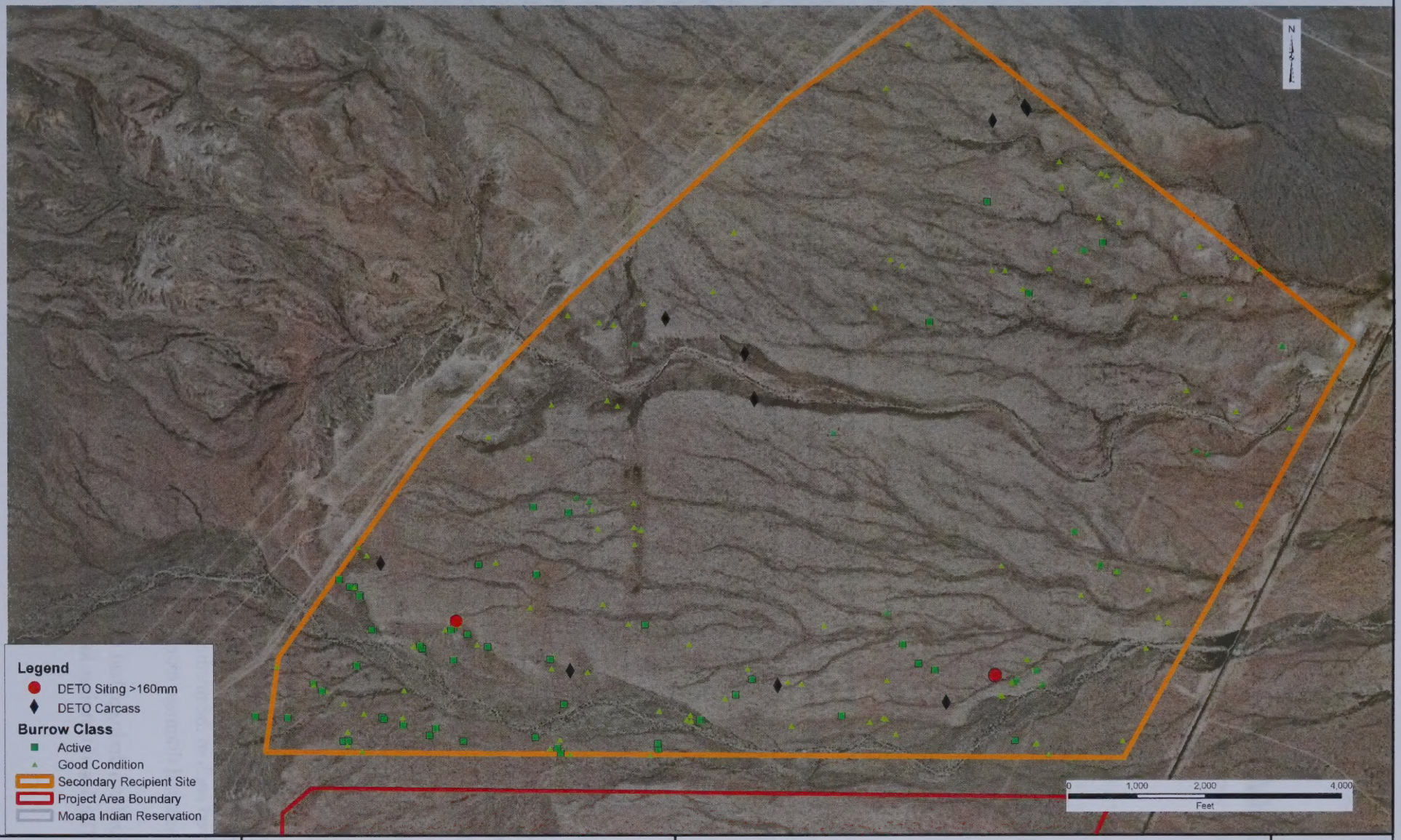
Figure 7 shows documented desert tortoise observations and sign in the secondary recipient site. Two desert tortoises were observed in the southern portion. Like other observations, these were found along ephemeral drainages. The best habitat quality identified on the secondary recipient site occurred along a drainage in the southern portion. The drainage provided suitable soil for burrow construction as well as available forage to support a small group of desert tortoises.

The central portion of this recipient site had a steep canyon present where three carcasses were identified with a small number of burrows on the western portion. Three carcasses were also documented in the northern area. Excluding the southern portion of the secondary recipient site, most of the habitat was of poor quality, compared to the Project area and primary recipient site. Soil was composed of caliche-coated rocks and hard desert pavement, making it difficult for desert tortoises to excavate burrows.

Application of the 2011 USFWS guidance population estimate equation indicates approximately twelve (12) desert tortoises were present within the secondary recipient site at the time of survey, with lower and upper 95% confidence intervals of 3 and 47 tortoises, respectively. Table 6 shows the results from the estimate equation taken from the USFWS guidance (2011a).

4.2.3 Tertiary Recipient Site Habitat Quality

A third recipient site was identified and surveyed during October 2011 for suitable desert tortoise habitat and to estimate the resident population. Like the Project area and the other recipient areas, Mojave Desert creosote bush scrub covers the tertiary recipient site. This recipient site is located south and adjacent to the solar facility, encompassing 2,500 acres. The northern portion of the area is composed of steep, rocky drainages that are fairly unvegetated. Smaller washes fan out from these rocky drainages, creating sandy-loam to light gravel-clay soils, indicating good habitat for burrow construction.



ARCADIS

K Road Power
San Diego, California

KRoad Moapa Solar Project

Moapa River Indian Reservation

Secondary Recipient Site Survey Results (October 2011)

January 2012

FIGURE 7

Map Document: (S:\GIS_Resources\Standards_Guidelines\Map Templates\GIS_TEMPLATES_2005\11x17_Landscape.mxd)
7/19/2005 - 5:27:24 PM

Table 6: Secondary Recipient Site Population Estimate Results

Table 3. USFWS Desert Tortoise Pre-Project Survey Guidance What is the estimated number of tortoises and associated 95% confidence interval for the action area?	
INSTRUCTIONS *Use this tab when your transects were of unequal length. Enter the appropriate values from the survey into the yellow cells below. The number of tortoises and assocated 95% confidence interval for the action area will be calculated.*	
N =	12.1
Lower 95%CI =	3.08
Upper 95%CI =	47.84
Total action area (acres)	2500
Prob that a tort is above ground given winter rainfall (Pa from Table 2) =	0.800
Total length of transects walked (km) =	331
Number of transects walked =	130
Number of tortoises found during surveys (n) =	2

Vegetation in the tertiary recipient site was similar to that of the Project area and primary recipient site with areas of good habitat quality found along washes. Most desert tortoise sign was documented along these areas, also indicating good habitat quality. As stated previously, additional habitat surveys will be conducted in spring 2012 to identify plant species and forage quality and quantity in this area.

4.2.3.1 Estimated Desert Tortoise Density in the Tertiary Recipient Site

Figure 8 shows desert tortoise observations and sign documented at the tertiary recipient site. Four desert tortoise observations were documented during field surveys. Two desert tortoises were observed each in the northern and southern areas. The northern observations were identified along an ephemeral drainage extending from east to west across the site.

The northern drainage had similar habitat qualities as drainages located in the primary recipient site. The desert tortoises located in the southern portion were located in sandy-loam to light gravel-

clay soils. This soil type is optimal for excavating burrows. Caliche caves were also observed. Good quality habitat is more available and interspersed throughout the tertiary recipient site.

Application of the 2011 USFWS guidance population estimate equation indicates approximately twenty-two (22) desert tortoises were present within the tertiary recipient site at the time of survey, with lower and upper 95% confidence intervals of 7 and 64 desert tortoises. Table 7 shows the results from the estimate equation taken from the USFWS guidance (2011).

4.3 Habitat Quality Conclusions

Good habitat quality was determined by the amount of vegetation present and forage species available to desert tortoises. Presence of desert tortoise sign also indicated areas of high use, as well as soil conditions for burrow construction. The primary recipient site is similar to the Project area with available forage species and presence of washes that desert tortoises have been known to occupy for burrow construction, foraging, and corridor use (Spangenberg 1995, Jennings 1997). Habitat quality in the secondary and tertiary recipient sites is more limited in availability compared to the Project area and primary recipient site, but can be utilized if needed during translocation.

Because suitable habitat is present in select locations within each recipient site, translocated tortoises from the Project area will be released at designated locations within available habitat. A Disposition Plan will be developed for each individual tortoise and coordination with USFWS will be important in determining where each translocated desert tortoise will be released at the recipient site(s) so that resident desert tortoise population dynamics is not detrimentally impacted. Section 5.3.6 has additional details on these Disposition Plans.

All resident tortoises at each recipient site and the control site will have a health assessment conducted and fitted with a transmitter prior to translocation (USFWS 2011a). This process includes gathering data on sex, age, and health conditions of resident tortoises. This information will be used in conjunction with the same information collected from desert tortoises from the Project area during clearance surveys to determine placement of translocated tortoises. Section 5 discusses translocation procedures that will be performed during the translocation project following USFWS 2011 guidelines.

ARCADIS

K Road Power
San Diego, California
KRoad Moapa Solar Project

Moapa River Indian Reservation
Tertiary Recipient Site Survey Results (October 2011)

January 2012

FIGURE 8

Map Document: (S:\GIS_Resources\Standards_Guidelines\Map Templates\GIS_TEMPLATES_2005\11x17_Landscape.mxt)
7/19/2005 - 3:27:24 PM

Table 7: Tertiary Recipient Site Population Estimate Results

Table 3. USFWS Desert Tortoise Pre-Project Survey Guidance What is the estimated number of tortoises and associated 95% confidence interval for the action area?	
INSTRUCTIONS *Use this tab when your transects were of unequal length. Enter the appropriate values from the survey into the yellow cells below. The number of tortoises and assocated 95% confidence interval for the action area will be calculated.*	
N =	22.3
Lower 95%CI =	7.79
Upper 95%CI =	64.04
Total action area (acres)	2500
Prob that a tort is above ground given winter rainfall (Pa from Table 2) =	0.800
Total length of transects walked (km) =	360
Number of transects walked =	134
Number of tortoises found during surveys (n) =	4

5. Translocation Procedures

Translocation plans for the desert tortoise have recently been a common conservation effort to mitigate incidental take of the species where urban development is occurring. Urban development has decreased the amount of habitat available for desert tortoises, which in turn has indirect impacts on populations such as an increase in predation. Urban development provides sources of food and shelter for species that predate on desert tortoises like common ravens and free-roaming dogs (USFWS 1994). To address these threats and to minimize impacts to the desert tortoise, the USFWS has developed recommended guidelines designed to increase the success of translocation plans for desert tortoise conservation.

Because desert tortoise translocations have recently become a conservation effort, long-term success has not been completely studied. Translocation success is dependent on the ability of desert tortoises to re-establish home ranges and social interactions between both translocated and

resident desert tortoises (Berry 1986, Tuberville et al. 2005). Some groups have a higher success rate than others. Hatchlings and juveniles have a lower potential of disturbing the resident population; however are more prone to predation. Adult males tend to have a lower success rate because they tend to be more aggressive, and active while dispersing greater distances. Female success tends to fall in between juveniles and males (Berry 1986). The time of year translocation occurs also has an impact on initial translocation success. Conducting translocations during periods of forage availability such as during the spring and fall, has shown higher survivor rates (Field et al. 2003).

The effect of translocation on desert tortoises is complex. The USFWS (2011a) guidance is designed to minimize impacts to both translocated and resident desert tortoises, and increase survival rates. The following sections discuss guidelines required by USFWS for the development of a Translocation Plan for the Project.

5.1 Compliance with Plans, Permitting, and Training

All techniques and recommended sites in this translocation plan are intended to be in compliance with all required and issued permits for the Project and for the regulatory plans proposed for long-term conservation of the Mojave Desert population of the desert tortoise. All training required by USFWS and other agencies will be conducted prior to any ecological decision making and handling of desert tortoises. Authorized biologists will have thorough knowledge of desert tortoise ecology, demonstrate training needed to handle and monitor desert tortoises, as well as ensure proper protection measures on the desert tortoise and its habitat (USFWS 2009). Actions discussed in this translocation plan will be based on the USFWS guidelines (2011a) and recommendations from previous desert tortoise translocation plans.

The selected recipient site location for the translocated desert tortoises will be designated as a preservation area on the Reservation. The Biological Opinion outlines details on preservation of the selected recipient site location. The total preservation area may include acreage from the primary and secondary recipient sites, but will not exceed 6,000 acres.

5.2 Clearance Surveys and Exclusionary Fencing

An initial survey of the Project area for desert tortoises that would be affected by the Project action was conducted in October 2010. The survey was conducted using the most recent survey protocol available at the USFWS website. The results of this survey indicated that an approximated population of 51 individuals may be translocated to recipient sites on the Reservation. Recipient

site areas must encompass an area within a 6.5-kilometer (km) radius of the set of potential release points because desert tortoises moved greater than 500 meters (m) are expected to settle within 6.5 km from the release point (USFWS 2011a). Figure 9 represents this potential dispersal from burrows on the primary recipient site based on natural topography, barriers (such as the railroad), and an estimated maximum 6.5 km dispersal.

Exclusionary fencing of the entire Project area will occur prior to the clearance survey and construction activities to ensure no influx of additional desert tortoises to the solar facility. Exclusionary fencing will consist of a 1-inch horizontal by 2-inch vertical mesh, extending at least 18 inches above the ground and 6 inches below the ground (USFWS 2009). In areas where it is difficult to bury the fence, the lower 6 to 12 inches of the fence will be bent at a 90-degree angle towards the potential direction of encounter with desert tortoise and covered with cobble or other suitable material to prohibit the ability of any animal digging underneath. Exclusionary fencing is planned to occur during the summer of 2012 (June through August). During the fence construction process, small gaps along the fence will be constructed so that any desert tortoises trying to pass through will not exhaust themselves. These gaps will be closed prior to the start of clearance surveys so that no influx of desert tortoises to the Project area occurs.

Clearance surveys are intended to reduce the likelihood that desert tortoises are killed or injured during Project activities. Clearance surveys will consist of 100 percent coverage of the Project area. Clearance surveys will begin during the fall of 2012 when the tortoises are active (September through October) and temperatures meet the required conditions (see below sections). Surveys will occur in the Phase 1 area of the Project area and continue to the Phase 2 and Phase 3 areas after each previous phased area is cleared. Temporary desert tortoise exclusionary fencing will be constructed between each phase area. Surveys will consist of 5-meter wide transects. During the first clearance survey, any identified burrows will be excavated for desert tortoises and eggs. All individuals will be handled by an authorized biologist.

Source: USGS 7.5 Topographic Map

ARCADIS	K Road Power San Diego, California KRoad Moapa Solar Facility	Moapa River Indian Reservation Desert Tortoise Distribution Map - 6.5 kilometer Max Extent	January 2012 FIGURE 9

Map Document: (S:\GIS_Resources\Standards_Guidelines\Map Templates\GIS_TEMPLATES_2008\11x17_Landscape.mxd)
7/19/2005 -- 5:27:24 PM

As a desert tortoise is captured, a health assessment will be conducted and the individual will be moved to a temporary quarantine holding pen. Protocols and guidelines for the above actions are discussed according to the USFWS guidelines (2011a) and the USFWS Desert Tortoise Manual (2009) in the following sections.

After the required data is collected for a desert tortoise, it will be taken to temporary quarantine pens to the proposed O&M area or similar area within Phase 3 of the solar facility for approximately ten to fifteen days before receiving results of blood work analysis and additional health assessments and then released on a recipient site. A second clearance survey is required for the Project area to ensure that no desert tortoise was excluded. If a desert tortoise is identified, the same procedures, as stated above, will be conducted, and a third clearance survey will be required. Clearance surveys will continue until all individuals within the Project area have been captured.

5.3 Desert Tortoise Handling and Transport

During all desert tortoise encounters, they will be handled using procedures stated in the Desert Tortoise Manual (2009) and the USFWS (2011a) guidelines to reduce potential stressors. All handling will be conducted by a USFWS authorized biologist.

5.3.1 Burrow Excavation and Artificial Burrows

Prior to excavation of a burrow, an artificial burrow will be constructed in the temporary quarantine facilities so that all captured tortoises will have immediate shelter. During clearance surveys, the first step when a burrow is encountered is to survey the burrow opening for desert tortoise eggs so that no impact shall occur to nests. Nests can be detected in areas where soil is less compacted, and have been located up to 6 feet in front of the burrow to 6 feet within the burrow. Nest and egg handling is discussed in the next section.

USFWS (2009) recommends two excavators to reduce the chance of striking a desert tortoise. Burrows should be excavated in its entirety with an additional foot after the end to ensure that a tortoise is not behind a dirt wall. Excavation should be ceased upon encounter of a tortoise. Additional burrow excavation details are found in Section 6.5 of the Desert Tortoise Manual (2009).

USFWS approved and trained personnel will construct artificial burrows prior to burrow excavation during clearance surveys. Artificial burrows should be created in the same orientation and size from which the burrow the desert tortoise was taken from. Burrow construction involves

digging a three-sided shelf upon which plywood will be placed to serve as the roof of the burrow. A channel is dug below the level of the shelf which approximates the width of the tortoise and functions as the actual burrow (USFWS 2009). Rocks should be placed along the eave of the burrow roof, above the opening, and the dirt shall be mounded so that rain water does not puddle on top when the artificial burrow is completed. Artificial burrows may also be constructed of properly sized PVC tubing and/or use of a gas powered auger to adequately obtain a sub-terrainean environment.

5.3.2 Nest and Egg Handling Protocol

Eggs are typically laid during May through June and will hatch July through October. If a nest is discovered, it shall be excavated by hand when air temperature 6 inches above the ground is approximately equal to the soil temperature at egg level (USFWS 2009). Disposable gloves or latex gloves must be worn when handling eggs. Eggs tend to be more fragile in the last few weeks before hatching so extra care shall occur during August through October (DTC 1994). Before handling, a small dot and number is marked on top of each egg to establish the egg's orientation in the nest. The egg will remain in this orientation during all handling. The authorized biologist shall measure and record the depth of the nest below the soil surface, the cardinal location of the nest in relation to any adjacent shrub, the species of shrub, approximate foliage volume, and the soil type (USFWS 2009). Eggs are placed in a bucket with soil of 1 inch depth from the nest and then covered with soil, remaining in the same orientation as discovered.

Eggs shall be transported to the recipient site during desert tortoise translocation, unless directed differently by USFWS. A separate area near the temporary quarantine pen location will be set aside to house eggs until translocation. The bucket containing the eggs, as described previously, shall be filled to the depth of the original nest and buried within this area.

During translocation, a nest in good tortoise habitat on the recipient site shall be prepared with the same depth, orientation, location in relation to a specific shrub species, and in the same soil type as the original nest. The eggs are then transferred to this nest maintaining their original orientation and remaining in contact with each other. The eggs then shall be covered with soil removing any cobbles and pebbles that may be present within the soil. Open-mesh fencing shall be used to construct a fence around translocated nests to prevent predation (DTC 1994). A qualified biologist will monitor the nest weekly under consultation with USFWS.

5.3.3 Handling Protocol

Only an authorized biologist will handle the desert tortoises during the translocation process. Desert tortoises will be handled and processed (weighed, measured, or sexed) according to the USFWS (2011a) guidelines and the Desert Tortoise Manual (2009). Desert tortoises will not be processed when temperatures exceed 95 degrees Fahrenheit (° F) or are below 55° F. Temperatures will be measured in the shade and protected from the wind at a height of 2 inches above the ground. If temperatures exceed either minimum or maximum processing temperatures during captivity, the desert tortoise will be kept in a controlled environment (65-85° F) until ambient temperature is within this range. Captive desert tortoises will be shaded at all times and monitored periodically for signs of overheating and stress.

When removing desert tortoises from burrows, the side of the soil mound at the entrance to the burrow ("apron") will be tapped 5 to 6 times to listen for any movement. If the tortoise is visible within the burrow, tap the carapace with a stick 3 to 4 times because the tortoise may emerge to the burrow entrance if tapping is successful (Medica et al. 1986, USFWS 2009). If tapping is unsuccessful, discontinue and carefully excavate the burrow according to USFWS guidelines (2011a) as discussed in Section 5.3.1.

Clean latex gloves will be used when handling all desert tortoises. The biologist should hold the desert tortoise on both sides between the carapace and plastron, keeping the plastron facing the ground at waist height. Data collection will consist of size, sex, distinctive features, indication of health and disease (ectoparasites, shell lesions, signs of osteoporosis or osteomalacia, injuries, URTD). Handling will be done carefully to minimize the chance of the tortoise voiding its bladder, which can be very detrimental because water is stored in the bladder (Averill-Murray 2002). If voiding occurs, the tortoise will be rehydrated by placing the tortoise in a sterilized plastic tub with water level not exceeding the height of its lower jaw for approximately 20 minutes. Water temperature should be relative to ambient temperature. In addition, prior to release, all desert tortoises will be rehydrated using this same method.

5.3.4 Health Assessments

Health assessments will be conducted on each desert tortoise at capture and at release and will follow the Health Assessment Procedures for the Desert Tortoise Handbook (USFWS 2011b). The health assessment will include examination for abnormalities, recent or previous trauma, and for signs of disease. Two diseases are found to be most common among desert tortoises: URTD and a shell disease called cutaneous dyskeratosis. URTD is the most common disease among desert

tortoises. It is typically spread by contact with an infected individual or through airborne particles (Jacobson et al. 1991, USFWS 2011b). Typical signs of URTD may include development of lesions in the nasal cavity, excessive nasal discharge, swollen eyelids, sunken eyes, lethargy, and eventually mortality (Jacobson et al. 1991, USFWS 2011b).

Cutaneous dyskeratosis is the most common shell disease among desert tortoise. This disease appears as lesions along the scute sutures of the plastron, spreading to the scutes themselves (Jacobson et al. 1994, USFWS 2011b). In advance stages, lesions can become infected and expose tissues and bone. Cutaneous dyskeratosis may have multiple causes such as environmental toxicants and/or nutritional deficiencies (Berry 1997). Documentation of signs of this disease will be conducted. Other acute diseases such as the herpes virus can be detrimental to desert tortoise populations because of the disease's ability to spread rapidly. Table 8 lists common clinical signs to look for during a health assessment and what factor could potentially be causing the signs. This table is according to USFWS (2011b).

Table 8: Clinical signs that may be observed when conducting physical examinations on desert tortoises in the field.**

Clinical Signs	Possible Conditions/Causes
Behavioral	
Extending neck, increased respiratory effort, mouth gaped open	Respiratory diseases (e.g. tracheal obstruction, reduced lung capacity secondary to coelomic cavity effusion, pneumonia – many potential causes such as bacterial and/or viral)
Weakness, non-responsive, outside burrow during cold weather	Severe debilitation (many potential causes)
Head	
Eye discharge (serous or mucous), red and/or swollen conjunctive and periocular tissue	Eye infection, URTD*, abrasion/irritation, foreign bodies, nutritional imbalance

Clinical Signs	Possible Conditions/Causes
Nasal discharge (serous or mucous)	URTD*, clear nasal discharge sometimes seen after a tortoise has been drinking, do not mistake frothy oral discharge from stressed or overheated tortoise for nasal discharge
Erosion and/or depigmentation of skin around nares	Trauma, chronic nasal discharge associated with URTD*, skin infection
Asymmetrical or abnormally shaped nares	Normal, impacted with sand/soil, scarring or exudates secondary to chronic infection such as URTD*
Abnormal breath sounds (wet/cracking sounds)	URTD*, pneumonia (many potential causes)
Swollen tympanum (membrane over ear)	Abscess (bacterial infection), vitamin deficiency, trauma
Oral cavity	
Pale mucous membranes	Anemia, severe debilitation, shock
Ulcers, crusts, or plaques on tongue or inside mouth	Viral (herpes virus, iridovirus), bacterial or fungal infection, embedded foreign body
Limbs/body	
Skin swelling	Abscess/infection, parasite, tumor, trauma, over hydration
Skin discoloration	Incomplete shed, infection, scar from prior injury
Emaciation/reduced muscle mass	Starvation, severe debilitation (many potential causes), chronic disease
Lameness, swollen joints	Trauma/injury, nutritional disease, metabolic disease (such as gout), neurological disease

Clinical Signs	Possible Conditions/Causes
Firm mass/object in coelomic cavity	Substrate ingestion, feces, eggs, urolith (bladder stone), tumor
Shell	
White or yellow discoloration, flaking	Healing traumatic injury, bacterial or fungal infection, dyskeratosis (nutritional deficiency, toxicity, autoimmune disease, infectious disease, metabolic disorder, or other)
Soft spots, especially at mid-carapace	Nutritional disorder, toxicity, trauma
Red blotches	Trauma, infection
Malformed shell	Trauma, nutritional disorder

*URTD: Upper respiratory tract disease caused by *Mycoplasma spp* or other pathogen

**Table 1 from *Health Assessment Procedures for the Desert Tortoise (Gopherus agassizii): A Handbook Pertinent to Translocation* (USFWS 2011b)

To minimize any health impact to individual desert tortoises as well as to the translocated population and recipient population, blood samples will be taken after each individual is captured and has undergone the initial health assessment, including recipient site residents. Along with any visual characteristics of disease, this will identify any infected and contagious individuals as well as provide an overall health assessment of the Mojave population of desert tortoise on the Reservation. Blood samples will be drawn from the subcarapacial vein of each desert tortoise sufficient enough to fill the minimum amount for an enzyme-linked immunosorbent assay (ELISA) which is 0.5 ml (Hernandez-Divers et. al 2002, USFWS 2011b). Blood samples will be sent to the University of Florida Mycoplasma Research Lab or another approved laboratory for analysis. Desert tortoises determined to be infectious or unhealthy will be sent to the Desert Tortoise Conservation Center or other agency-approved facility where they will undergo further assessment, treatment, and/or necropsy; some desert tortoises may be rehabilitated and potentially be eligible for subsequent release (USFWS 2011a).

Desert tortoises must be handled in a way such that parasites or diseases do not spread from one individual to another. A new pair of disposable latex or rubber gloves will be worn when handling each tortoise, and disposed in a plastic trash bag off-site. All tools that contact a desert tortoise will be disinfected after each use. Desert tortoise should not contact clothing. Disinfectant solution shall consist of a 0.175 percent sodium hypochlorite (bleach) solution, which is a 1:10 dilution of 5 percent household bleach to water (USFWS 2011a). Disinfectant solutions will be used on all equipment contacting desert tortoises as well as sanitizing the quarantine pens between translocations.

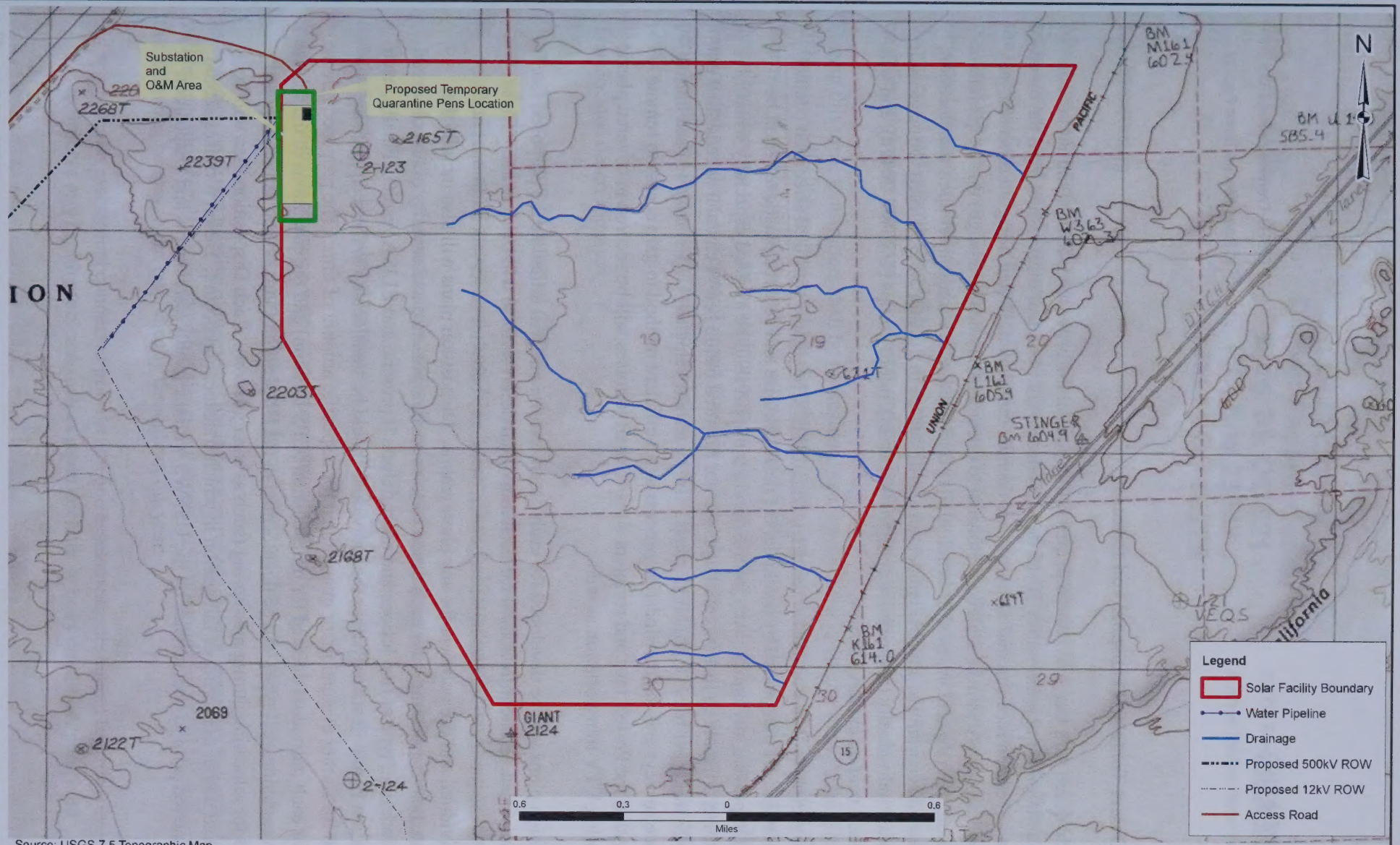
5.3.5 Temporary Quarantine Pens

Temporary quarantine pens will be constructed in the proposed O&M area (Figure 10) or potentially within the Phase 3 area of the solar facility. Construction in the O&M area will occur after the entire Project area has been cleared and tortoises translocated. This area also is adjacent to the access road which will aid in translocation. Pens will be 6 meters by 6 meters that will enclose one tortoise and an artificial burrow. Walkways between pens will be constructed so that access to the pen can be obtained. Pens will also be double fenced to keep tortoises within the pen from contaminating other tortoises. Fencing will be at least 30 inches above the ground and at least 12 inches buried below the ground to ensure the desert tortoise cannot escape (SDZG 2010). The fencing will flare out 10 inches at the bottom to prevent tortoises from trying to dig out from the inside and predators trying to dig in. In addition, pens will consist of ½ inch by ¼ inch fencing with a cover to prevent predators, including smaller predators from gaining access to the tortoise (SDZG 2010).

All pens will be approved by USFWS and appropriate agencies, and the authorized biologist shall check pens daily to ensure all desert tortoises within the pens are present and no damages to the pens has occurred. Any impacts to penning or tortoises shall be reported to USFWS within one day. USFWS shall be contacted if any mortalities or injured tortoises are identified.

Desert tortoises shall be transferred to temporary quarantine pens after health assessments are completed during the clearance survey. Approximately forty temporary quarantine pens are planned to be constructed. Tortoises will remain in the pens for approximately 10-15 days; receive an additional health assessment (blood draw), rehydrated, and fitted with a transmitter with a unique identifier upon translocation. All pens and burrows will be disinfected between housing each individual to minimize contamination. The number of pens needed will be adjusted accordingly during clearance surveys for each phase area, if necessary.

A study conducted by Tuberville et al. (2005) found that the effectiveness of penning varies with sex and age, and longer penning is beneficial to translocated desert tortoises because it will give an opportunity to associate with familiar individuals, thus facilitating social interactions. Berry (1986) found similar results that because desert tortoises can be a relatively long-lived species, relationships among associated individuals are likely to be established and can influence social hierarchies. Therefore, it may be beneficial to place desert tortoises from the same relative area in the temporary quarantine pens at the same time and released on the recipient sites in a relatively close area.



Source: USGS 7.5 Topographic Map

Map Document:Austin/092001/GIS/MXD/BLM Lands Figure 1

ARCADIS	K Road Power San Diego, California K Road Moapa Solar Project	Moapa River Indian Reservation Proposed Temporary Quarantine Pens Facility Location Map	January 2012 FIGURE 10

5.3.6 Desert Tortoise Transport and Release

Captured desert tortoises will remain in quarantine pens in the proposed O&M or similar area on the Reservation for approximately 10-15 days. Release will not occur until results from the blood samples have been received and the tortoise is deemed uninfected. When being translocated, an additional health assessment shall be performed to document any health changes during quarantine. In addition, each desert tortoise will be rehydrated and fitted with a transmitter upon translocation, and released according to suitable temperature as discussed in Section 5.3.3. Desert tortoises will be released individually (approximately 1,000 feet apart), not in groups (USFWS 2011a), and will be released near an existing burrow.

Desert tortoises will be transported using a covered plastic tub that is sterilized after each contact with a tortoise. If transported by a vehicle, the desert tortoise and covered plastic tub shall be secured to prevent any injury. Any jolting during transport shall be avoided especially when transporting a female so that potential eggs are not ruptured inside her. Vehicular speeds shall not exceed 25 miles per hour (mph) on all roads. Utility terrain vehicles (UTVs) may be used during clearance surveys and the translocation process as an efficient method to gain access to remote areas within the Project area and recipient sites. Desert tortoises will be secured in covered plastic tubs during UTV transportation as well.

Disposition plans will be developed for each desert tortoise and will articulate the proposed fate for each individual. Basic information for each individual desert tortoise will be recorded. These include a unique identification number, gender, mass, any behavior observed, additional notes on the individual, and file numbers for any photographs. Disposition plans will also include the complete health assessment for each desert tortoise such as presence and severity of any observed nasal discharge, type of oral lesions and other defects if present, and ELISA results. Finally, each Disposition Plan will state whether the individual should be translocated to the recipient site, retained for further evaluation, or quarantined for a specific amount of time. The proposed release point for each individual deemed for translocation (GPS location) and the conditions of the release point (vegetation, soil type) will be documented in the Disposition Plan, as well as the proposed method for relocation during monitoring (such as triangulation). Each Disposition Plan will be completed within the spring or fall season in which translocation occurs. Desert tortoises should not be moved prior to concurrence by the USFWS with the health assessments and Disposition Plans.

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

5.4 Monitoring

Monitoring of translocated, recipient, and control site desert tortoises will occur over a five year period from the start of the translocation process. This will provide information on the success of the translocation and any effects on the translocated and recipient site tortoises that may have occurred such as disease, predation, and/or competition. During the monitoring period, any observed changes to the habitat such as vegetation loss or an increase in predation, will be documented and submitted to USFWS and appropriate agencies. Monitoring will be conducted by qualified biologists using radio telemetry and incidental observations.

During this time, transmitters shall be maintained on a regular basis to ensure working quality and all transmitters will be removed at the completion of the five year monitoring period, with USFWS approval. Based on initial Project area surveys and USFWS estimation methods, approximately 51 desert tortoises are to be translocated to recipient sites on the Reservation for the Project. All translocated, resident, and control desert tortoises will be monitored for a five year monitoring period with a frequency according to the below schedule and according to the USFWS guidelines (2011a).

Translocated desert tortoises:

- Once within 24 hours of release
- A minimum of twice weekly for the first two weeks after release
- A minimum of once a week from March through early November for the 5 year monitoring period
- Once every other week from November through February for the 5 year monitoring period.

Resident and control site desert tortoises:

- A minimum of once a week from March through early November
- A minimum of once every other week from November through February

Information on desert tortoise movements, habitat use, survival, disease, nutrition, and predation will be recorded for all 3 monitored tortoise populations. USFWS guidelines (2011a) require that the following be monitored periodically throughout the year:

- A health assessment conducted prior to and one assessment subsequent to over-wintering to observe any health problems such as rapid declines in body condition, perceived

outbreaks of disease, mortality event. Any health issues observed should be reported to Nevada U.S. Fish and Wildlife Service Office in Las Vegas, Nevada.

- Mortalities are documented and cause is investigated as thoroughly as possible and reported to Nevada U.S. Fish and Wildlife Service Office within 48 hours upon discovery. Mortality documentation includes the desert tortoise unique identifier, location, and cause of death.
- Additional monitoring variables include annual and perennial vegetation sampling to capture potential changes in habitat characteristics, and site specific conditions such as potential toxicants adjacent to roadways, increase in human activities within or near the area, and increase in predators.

Monthly reports will include an analysis of all relevant desert tortoise health and habitat use observations, data on animal movements recorded from telemetry study as well as any issues encountered in recipient site management. The monthly report will include the following information: (1) unique identity of the translocated, resident, and control tortoise; (2) location (global positioning system (GPS) coordination and maps) and dates of observations; (3) general conditions and health, including injuries and state of healing; and (4) locations moved from and to over the past month. Upon conclusion of the five year monitoring period, health assessments will be conducted on all remaining desert tortoises from the 3 monitored populations. Transmitters shall remain attached until the USFWS and appropriate agencies have determined whether or not further action is warranted at the site (USFWS 2011a). Figure 11 provides a decision tree for the translocation program.

6. Translocation Schedule

Desert tortoise translocations shall begin September through October of 2012 with recipient site capture and health assessment occurring in Spring 2012 (April/May) upon timely receipt of the Biological Opinion and Take Permit. This time frame is when tortoises are active and air temperatures do not exceed 95° F or are below 55° F. This also will allow for ground disturbance to begin at the beginning of 2013 in the Phase 1 area of the Project. Table 9 describes a translocation schedule with specific aspects of USFWS requirements to implement to increase success rates for desert tortoises. This gives construction an initial start date of January 2013, completing phases 1, 2, and 3, through late-2016.

In October 2010, initial surveys were conducted throughout the Project area to determine the current desert tortoise population. The USFWS population estimation equation (2011a) determined that 51 desert tortoises will need to be translocated from the area prior to construction.

In October 2011, surveys were conducted to determine suitable recipient site locations on the Reservation. Three recipient sites were identified: a 6,000 acre area approximately 4.5 miles north of the Project area (primary recipient site) and two 2,500 acre areas adjacent north and south of the Project area. The southern 2,500 acre site may potentially be the control site.

Exclusionary fencing will be installed around the entire Project area beginning June/July of 2012. During fence installation, any burrow encountered shall not be disturbed. Also during this time frame, temporary quarantine pens will be constructed in the proposed O&M area. Approximately forty pens are recommended to be installed in this area. Each desert tortoise will remain in the quarantine pens for approximately 10-15 days until health assessment results are received. The translocation schedule has translocations occurring from September through October for Phases 1 and 2, resuming in spring of 2013 for remaining Phase 2 and Phase 3.

Clearance surveys will begin in September 2012 when desert tortoises are active from their burrows. Clearance surveys will begin in the northern part of the Project area where Phase 1 will occur, and continue to the southern areas (Phases 2 and 3) after the Phase 1 area has been cleared. Temporary desert tortoise exclusionary fencing shall be constructed between the phase areas, and clearance surveys will be conducted according to the phase order. Second and potential third clearance surveys will follow the same route as initial clearance surveys.

Once all clearance surveys are completed and no desert tortoises are within the Project area, construction work and ground disturbance will begin at the beginning of 2013. Exclusionary fencing will remain in place throughout the life of the Project to ensure no influx of desert tortoises into the Project area.

Figure 11: Desert Tortoise Translocation Decision Tree

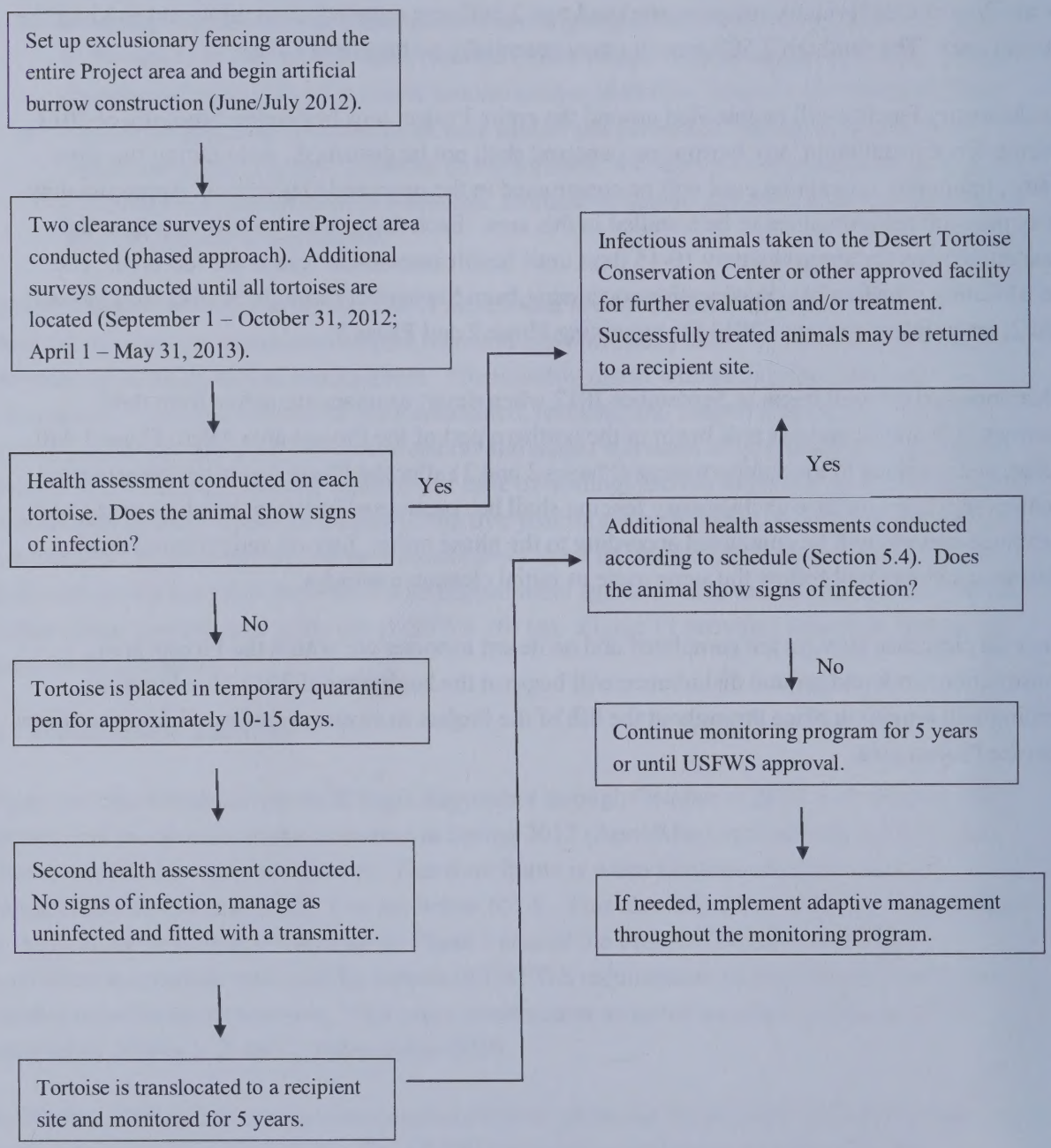

Set up exclusionary fencing around the entire Project area and begin artificial burrow construction (June/July 2012).
Two clearance surveys of entire Project area conducted (phased approach). Additional surveys conducted until all tortoises are located (September 1 – October 31, 2012; April 1 – May 31, 2013).
Health assessment conducted on each tortoise. Does the animal show signs of infection?
Yes
Infectious animals taken to the Desert Tortoise Conservation Center or other approved facility for further evaluation and/or treatment. Successfully treated animals may be returned to a recipient site.
No
Tortoise is placed in temporary quarantine pen for approximately 10-15 days.
Second health assessment conducted. No signs of infection, manage as uninfected and fitted with a transmitter.
Tortoise is translocated to a recipient site and monitored for 5 years.
Yes
Additional health assessments conducted according to schedule (Section 5.4). Does the animal show signs of infection?
No
Continue monitoring program for 5 years or until USFWS approval.
If needed, implement adaptive management throughout the monitoring program.

Table 9: Translocation Schedule

Task	2012											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Translocation recipient sites selected in **October 2011**.												
Exclusionary fencing of entire Project area. Temporary quarantine pens and artificial burrows constructed. Present burrows avoided.												
Clearance surveys begin in the Phase 1 area. After 100% cleared, Phase 2 and 3 clearance surveys begin. Recipient and control site tortoises assessed and fitted with transmitter.												

Capture tortoises, complete health assessments, sample blood, eggs collected, transferred to pens.												
Complete secondary health assessment, rehydrate, affix transmitter, release at recipient sites. Re-nest eggs.												
Monitor translocated tortoises and eggs.												
Monthly reporting.												
Maintain exclusionary fences in Project area.												

Task	2013 - 2015											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Phase 2 and 3 clearance surveys, following same procedures as in Phase 1.												
Monitor translocated tortoises and eggs.												
Monthly reporting.												
Construction work begins in Phase 1 area; Phase 2 & 3 after completed clearance surveys.												
Maintain exclusionary fences in Project area.												

Task	2016											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monitor translocated tortoises and eggs.												

Monthly reporting.	
Construction work.	
Maintain exclusionary fences in Project area.	
Construction work completion.	

Task	2017											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monitor translocated tortoises and eggs.												
Monthly reporting.												
Complete final health assessments on remaining tortoises. Transmitters remain attached until USFWS approves removal.												
Final reporting.												

7. Adaptive Management

Strategies for dealing with circumstances that will occur during implementation of this translocation plan have been incorporated from USFWS guidelines and recommendations, as well as techniques, recommendations, and lessons learned from other implemented desert tortoise translocations. In the event that unforeseen circumstances arise, USFWS and lead biologists will be notified, and notification also sent to all pertinent agencies involved in the Project. A contact list is provided in Table 10.

As stated earlier in this translocation plan, adaptive management may be necessary throughout the translocation and monitoring stages. All adaptive management techniques will be approved by USFWS and other authorized agencies, for the survival benefit of all affected desert tortoises and for the success of the translocation program.

Primary concerns of the translocation plan include predation from coyotes and ravens, spread of disease, primarily URTD, exceeding carrying capacity at recipient sites, and the availability of suitable habitat. Data regarding each of these threats will be collected at the initiation of the translocation and will be monitored and re-evaluated at the completion of the monitoring program after 5 years or until USFWS approval.

Following the release of all translocated desert tortoises to recipient sites, it is anticipated that some desert tortoises will die due to predation, disease, and competition with resident tortoises for available habitat in regards of territoriality. Most of this mortality is likely to occur in the first year after release, during the period that translocated tortoises are making long-distance movements and attempting to establish new home ranges. Male tortoises tend to have greater dispersing distances than females and juveniles due to an increase in aggressiveness and activity (Berry 1986). Adaptive management will be important in minimizing these potential impacts discussed above.

Adaptive management strategies that potentially may need to be implemented throughout the course of this translocation program and are agency approved include (but are not limited to):

- Discontinuing the translocation program;
- Making adjustments to the numbers of desert tortoises being translocated into each selected recipient site;
- Selection of additional recipient sites;
- Restoring habitat within translocation areas;

- Increase in the frequency of disease testing, and/or removing diseased individuals from the population to a desert tortoise conservation center;
- Adjustments to the buffers placed around disturbance (roads) or hazards (diseased individuals);
- Construction of fencing to prelude movement of desert tortoise into roads or to prevent human disturbance of the desert tortoise habitat within the recipient sites and;
- Control of the predator populations if it is determined to be a significant cause of desert tortoise mortalities.

Additional strategies can be developed based on data collected during monitoring activities throughout the 5-year monitoring program. Additional environmental plans are being developed for the Project to help minimize impacts on both the Project area and recipient sites. A Weed Management Plan is being developed to minimize invasive plant species being introduced and/or spreading throughout the Reservation as construction activities begin to impact the landscape. This plan has intentions to minimize impacts of invasive species on native vegetation that are a quality food source for the desert tortoise as well as other native fauna found throughout the Reservation.

As stated throughout this translocation plan, all translocation actions will be under USFWS and other authorized agency approval before implementation to maximize the effectiveness of this plan on all desert tortoises found throughout the Reservation.

Table 10: Contact List

Amy Heuslein	BIA Lead / Branch Chief (EQS)	Bureau of Indian Affairs Western Region	Amy.Heuslein@bia.gov	(602) 379-6750 x 1257	Western Regional Office 2600 N. Central Avenue Suite 400 Phoenix, AZ 85004-3008
Chad Martin	Project Manager	ARCADIS	chad.martin@arcadis-us.com	(512) 370-3868	100 Congress Avenue, Suite 1485 Austin, Texas 78701
William Anderson or acting Chairman	Chairman	Moapa Band of Paiute	wanderson@mvdsl.com	(702) 865-2787	One Lincoln Street PO Box 340 Moapa, NV 89025-0340
Mark Freidland	Managing Director	K Road Power	markf@kroadpower.com	(914) 806-0302	295 Madison Avenue New York, NY 10017
Michael Burroughs	Section 7 consultation	USFWS	michael_burroughs@fws.gov	(702) 515-5230	4701 North Torrey Pines Drive Las Vegas, Nevada 89129
Mark Chandler	Realty Specialist	BLM	mark_chandler@blm.gov	(702) 515-5064	4701 N. Torrey Pines Dr. Las Vegas, NV 89130

8. Literature Cited

Arizona Game and Fish Department (AGFD). 2001. *Gopherus agassizii*. Unpublished abstract compiled and edited by the Heritage Data management System, Arizona Game and Fish Department, Phoenix, Arizona. 8p. Internet site: http://www.gf.state.az.us/w_c/edits/documents/Gophagas.fi_001.pdf. Accessed: February 2011.

Averill-Murray, R. C. 2002. Effects on survival of desert tortoises (*Gopherus agassizii*) urinating during handling. Chelonian Conservation and Biology 4:430-435.

Benson, L. and R. A. Darrow. 1981. Trees and shrubs of the southwestern deserts. University of Arizona Press. Tucson, Arizona.

Berry, K. H. 1986. Desert tortoise (*Gopherus agassizii*) relocation: implications of social behavior and movements. Herpetologica 42:113-125.

Berry, K. H. 1997. Demographic consequences of disease in two desert tortoise populations in California, USA *in* Proceedings: Conservation, restoration, and management of tortoises and turtles, an international conference. J. Van Abbema (ed.). Wildlife Conservation Society Turtle Recovery Program and the New York Turtle and Tortoise Society. New York, New York, pp. 91-99.

Buckland, S. T., D. R. Anderson, K. P., burnham, J. L. Laake, D. L. Borchers, and L. Thomas. 2001. Introduction to distance sampling. Oxford University Press, Oxford, UK.

Bury, R. B., T. C. Esque, L. A. DeFalco, and P. A. Medica. 1994. Distribution, habitat use, and protection of the desert tortoise in the eastern Mojave Desert. Pages 57-72 *in* R. B. Bury and D. J. Germano (eds.), Biology of the North American Tortoises. National Biological Survey, Fish and Wildife Research 13, Washington, D. C.

Desert Tortoise Council (DTC). 1994 (revised 1999). Guidelines for handling desert tortoises during construction projects. E. L. LaRue, Jr., ed. Wrightwood, California.

Desert USA. 2012. The desert tortoise (*Gopherus agassizii*). http://www.desertusa.com/june96/du_tort.html. Accessed 6 January 2012.

Ernst, C. H., J. E. Lovich, and R. W. Barbour. 1994. Turtles of the United States and Canada. Smithsonian Institution Press, Washington.

Esque, T. C. Diet and diet selection of the desert tortoise (*Gopherus agassizii*) in the northeastern Mojave Desert. Master's Thesis. Colorado State University, Fort Collins.

Field, K. J., C. R. Tracy, P. A. Medica, R. W. Marlow, and P. S. Corn. 2003. Spring, fall, or winter? Success of desert tortoise translocation as affected by season of release. Abstract. Pp. 107-108 *in* Proceedings of the 2003 (28th Annual) Desert Tortoise Council Symposium, Las Vegas, Nevada.

Hernandez-Divers, S. M., S. J. Hernandez-Divers, and J. Wyneken. 2002. Angiographic, anatomic, and clinical technique descriptions of a subcarapacial venipuncture site for chelonians. Journal of Herpetological Medicine and Surgery 12:32-37.

Holland, R. F. 1986. Preliminary descriptions of the terrestrial natural communities of California. State of California, The Resources Agency, Nongame Heritage Program, Dept. of Fish & Game, Sacramento, Calif. 156 pp.

Jacobson, E. R., J. M. Gaskin, M. B. Brown, R. K. Harris, C. H. Gardiner, J. L. LaPointe, H. P. Adams, and C. Reggiardo. 1991. Chronic upper respiratory tract disease of free-ranging desert tortoises (*Xerobates agassizii*). Journal of Wildlife Diseases 27:296-316.

Jacobson, E. R., T. J. Wronski, J. Schumacher, C. Reggiardo, and K. H. Berry. 1994. Cutaneous dyskeratosis in free-ranging desert tortoises, *Gopherus agassizii*, in the Colorado Desert of Southern California. Journal of Zoo and Wildlife Medicine 25:68-81.

Jennings, W. B. 1997. Habitat use and food preferences of the desert tortoise, *Gopherus agassizii*, in the western Mojave Desert and impacts of off-road vehicles. Proceedings: Conservation, Restoration, and Management of Tortoises and turtles An International Conference, pp. 42-45.

Lawler, H. E. No date. A natural history of the desert tortoise, *Gopherus [Xerobates] agassizii*. International BioPark Internet site: http://www.biopark.org/Desert1.html. Accessed: June 12, 2011.

Longwell, C. R., E. H. Pampeyan, B. Bowyer, and R. J. Roberts. 1965. Geology and mineral deposits of Clark County, Nevada. Nevada Bureau of Mines Bulletin 62:1-208.

Medica, P. A., C. L. Lyons, and F. B. Turner. 1986. "Tapping:" A technique for capturing tortoises. Herpetological Review 17(1):15-16.

PBS&J. 2001. Moapa Paiute Energy Center Supplemental Draft Environmental Impact Statement. Volume I. BLM Case No. N-66776.

San Diego Zoo Global (SDZG). 2010. Temporary captive care of wild Mojave desert tortoises: Example of protocols used at the Desert Tortoise Conservation Center. Institute for Conservation Research, Desert Tortoise Conservation Center. October 12, 2010.

Spangenberg, E. K. 1995. Plants eaten by juvenile desert tortoises in the central Mojave Desert. National Biological Service. Desert Tortoise Symposium.

Tuberville, T. D., E. E. Clark, K. A. Buhlmann, and J. W. Gibbons. 2005. Translocation as a conservation tool: site fidelity and movement of repatriated gopher tortoises (*Gopherus polyphemus*). Animal Conservation 8:349-358.

United States Fish and Wildlife Service (USFWS). 2009. 2009 Desert tortoise field manual. Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service. Reno, Nevada. December 2009.

United States Fish and Wildlife Service (USFWS). 2011a. Translocation of desert tortoises (Mojave population) from project sites: plan development guidance. U.S. Fish and Wildlife Service. May 2011.

United States Fish and Wildlife Service (USFWS). 2011b. Health assessment procedures for the desert tortoise (*Gopherus agassizii*): a handbook pertinent to translocation. Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service. Reno, Nevada. May 2011.

United States Fish and Wildlife Service (USFWS). 2011c. Revised recovery plan for the Mojave population of the desert tortoise (*Gopherus agassizii*). Region 8, Pacific Southwest Region. U. S. Fish and Wildlife Service. Sacramento, California.

United States Fish and Wildlife Service (USFWS). 1994 (draft revised 2008). Desert tortoise (Mojave population) recovery plan. USFWS, Portland, Oregon. 73 pp plus appendices. Revised: August 1, 2008.

This page intended to be blank.

APPENDIX B. BLM REMUNERATION FEE PAYMENT FORM

Biological Opinion File Number: 84320-2011-F-0430

Biological Opinion Issued By: Nevada Fish and Wildlife Office, Las Vegas, Nevada

Species: Mojave Desert Tortoise (*Gopherus agassizii*)

Project Name: K Road Moapa Solar Project

Project Proponent: K Road

Phone Number: _____

Payment Calculations:	Clark County		Lincoln County		_____ County	
	Critical habitat	Non-critical habitat	Critical habitat	Non-critical habitat	Critical habitat	Non-critical habitat
# acres anticipated to be disturbed on federal land	0	12	0	0		
[illegible] rate (per acre)	0	0	0	0		
Total cost per county	$ 0		$ 0		$ -	

Total payment required (all counties): $

Amount paid: _____ Date: _____ Check/Money Order #: _____

Authorizing agencies: Bureau of Land Management, _____ Nevada

Make check payable to: Bureau of Land Management

Deliver check to:

Physical Address
Bureau of Land Management
Attn: Information Access Ctr
1340 Financial Blvd.
Reno, NV 89502

PO Box
Bureau of Land Management
Attn: Information Access Ctr
PO Box 12000
Reno, NV 89520-0006

For BLM Public Room

Process check to:
Contributed Funds-All Other
WBS: LVTFF1000800
7122 FLPMA
All other Res. Dev. Project and Management
Remarks: LLNV9300000 L71220000.JP0000 LVTFF1000800 Desert Tortoise Conservation Program

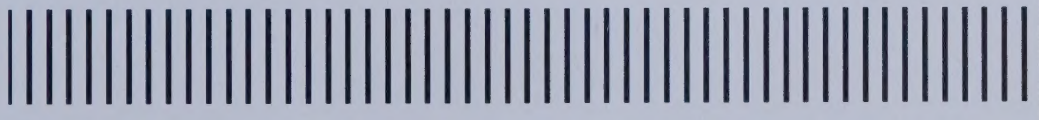
Please provide a copy of this completed payment form and the payment receipt to NV-930, Attn: T&E Program Lead

***T&E Program Lead will provide a copy to the appropriate District Office(s)*

This page intended to be blank.

Appendix C

Weed Management Plan



This page intended to be blank.

ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

K Road Moapa Solar Generation Facility

Weed Management Plan

January 2012

This page intended to be blank.

ARCADIS

John Kinsey
Biologist

Scott Walker
Senior Ecologist

Chad Martin
Project Manager

This page intended to be blank.

1. Introduction 1

1.1 Plan Purpose 1

1.2 Goals and Objectives 2

1.3 Project Description 2

1.3.1 Project Area 2

1.3.2 Proposed Project 4

1.3.3 Project Components 4

1.3.3.1 Substation, Transmission Line and Interconnections 4

1.3.3.2 Up to 500 kV Transmission Line 4

1.3.3.3 12 kV Transmission Line 6

1.3.3.4 Fire Prevention 6

1.3.3.5 Solar Field 6

1.3.3.6 Access Road 7

2. Weed Surveys 7

3. Weed Management 8

3.1 Identification of Problem Areas 8

3.2 Preventive Measures 9

3.3 Treatment Methods 9

3.4 Agency Specific Requirements 10

3.4.1 Bureau of Land Management Lands 10

3.4.2 Nevada Revised Statute (NRS): The Nevada Control of Insects, Pests, and Noxious Weed Act 11

3.4.2.1 NRS 555.150: Eradication of noxious weeds by owner or occupant of land 11

3.4.2.2 NRS 555.210: Performance of necessary work by weed control officer on failure by landowner; charges as lien. 11

3.4.3 BLM Las Vegas Field Office Weed Management Plan 11

4. Monitoring 11

4.1 Post-Construction Monitoring 12

4.2 Ongoing Monitoring 12

4.3 Monitoring of Known Infestation Areas 13

5. Herbicide Application, Handling, Spills, and Cleanup 13

5.1 Herbicide Application 13

5.2 Herbicide Spills and Cleanup 14

5.3 Worker Safety and Spill Reporting 14

6. References 15

Figures

Figure 1 Area Map 3

Figure 2 Proposed Project 5

Appendices

A. State and Federally designated noxious weed species of the State of Nevada

B. BLM approved adjuvants and herbicide formulas

C. Pesticide Use Proposal and Pesticide Application Report Forms

Acronyms Used in the Report

ATWS	Areas of Temporary Workspace
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
EI	Environmental Inspector
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
GPS	Geographic Positioning System
kV	kilovolt
KW	Kilowatt
MW	Megawatt
mph	miles per hour
NRS	Nevada Revised Statute
O&M	Operations and Maintenance
Plan	Weed Management Plan
PPE	Personal Protective Equipment
Project	K Road Moapa Solar Facility
Proponents	K Road Solar Power
Reservation	Moapa River Indian Reservation
ROW	Right-of-Way
Travel Plaza	Moapa Travel Plaza

This page intended to be blank.

1. Introduction

Although state regulations do not apply to Tribal lands, noxious weeds within Nevada and on applicable Bureau of Land Management (BLM) lands are defined in the Nevada Revised Statutes 555.05 as "any species of plant which is, or is likely to be, detrimental or destructive and difficult to control or eradicate." The Nevada Department of Agriculture Plant Industry Division provides a list of all weeds currently designated as noxious for the State of Nevada. Noxious weeds in Nevada are divided into three categories as identified below. This management plan addresses noxious weeds, as well as other invasive weed species deemed problematic by the BLM Weed Specialist.

- Category A weeds are currently not found or found in limited distribution throughout the state. These species are actively excluded from the state and actively eradicated. Control is required by the state on all infestations.

- Category B weeds are those that are established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur.

- Category C weeds are species that are currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer.

Though there are no tribal laws or regulations regarding the proposed methods within this Weed Management Plan (Plan), the Plan has been written to comply with BLM regulations throughout the entire Project area. The list of the State and Federally designated noxious species of Nevada is included in Appendix A.

1.1 Plan Purpose

The purpose of this Weed Management Plan is to describe the methods prescribed by K Road Solar Power (Proponents) of the K Road Moapa Solar Generation Facility (Project) to prevent and control the spread of invasive weed species within and immediately surrounding the Project area during and following construction of the Project. The Project's Proponents and their contractors will be responsible for carrying out the methods described in this Plan. This Plan is being developed in order to help control invasive weed species from becoming established in areas

disturbed by this project. This Plan is applicable to the construction and operation of the Project, areas of temporary workspaces (ATWS), any other areas disturbed during construction and areas where infestations have spread beyond the project footprint.

1.2 Goals and Objectives

The goal of this Plan is to implement early detection, containment, and control measures leading to eradication of invasive weeds during Project construction and operation. Invasive weeds are opportunistic plant species that readily flourish in disturbed areas, thereby preventing native plant species from establishing communities. Monitoring during construction and operational phases will include identification of any local infestation areas on and adjacent to the Project that may pose a threat of further infestation to the Project area. An evaluation of the effectiveness of the prescribed control measures will also be implemented during the operational phase.

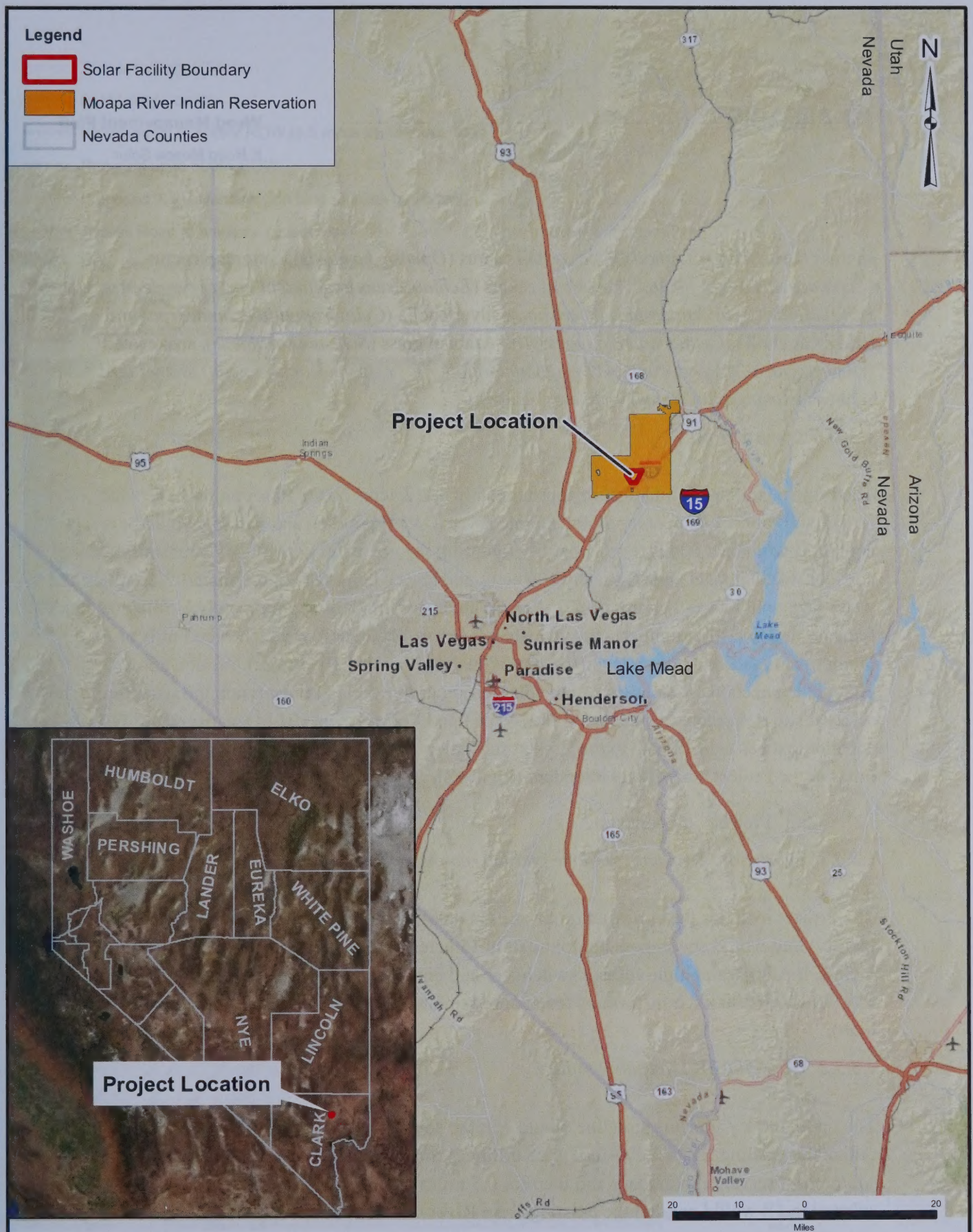
1.3 Project Description

1.3.1 Project Area

Clark County extends over 8,091 square miles with Lincoln County, Nevada to the north, the Arizona state line to the east, and the Colorado River, including Lake Mead, to the southeast. The California state line forms Clark County's southwest border and Clark County is bounded to the west and northwest by Nye County, Nevada. The Moapa River Indian Reservation (Reservation) consists of 71,954 acres of land located approximately 25 miles northeast of Las Vegas (Figure 1). Moapa Valley is the prehistoric flood plain of the Muddy River, which flows through the valley and eventually drains into Lake Mead.

The Project is located in the Basin and Range physiographic province in the north central portion of the Mojave Desert upon a mesa. Basin and Range structure in the Mojave Desert is characterized by rather abrupt mountain ranges. The topography of the Basin and Range consists primarily of exposed bedrock that is deeply cut by ravines and is surrounded by aprons of pediments and/or low-profile bajada slopes, which drain to interior closed basins (Benson and Darrow 1981; Longwell et al. 1965).

The general ecological setting of the Project is consistent with Mojave Desert scrub. The area is dominated by open stands of creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Desert saltbush scrub habitat and cactus-yucca scrub are also present and concentrated within ephemeral washes. Cacti species observed during the biological surveys were the barrel



Map Document:Austin/6923001/GIS/MXD/BLM Lands Figure 1

ARCADIS	K Road Power San Diego, California K Road Moapa Solar Facility	Moapa River Indian Reservation Project Vicinity Map	December 2011 FIGURE 1

cactus (*Ferocactus acanthodes*), beavertail cactus (*Opuntia basilaris*), cottontop cactus (*Echinocactus polycephalus*), hedgehog cactus (*Echinocereus engelmanii var. chrysocentrus.*), pencil cholla (*Cylindropuntia ramosissima*), silver cholla (*Cylindropuntia echinocarpa*) and teddybear cholla (*Cylindropuntia bigelovii*). Arabian grass (*Schismus arabicus*), snakeweed (*Gutierrezia sp.*), desert trumpet (*Eriogonum inflatum*), catclaw (*Acacia greggii)* and winged saltbush (*Atriplex canescens*) were also identified.

1.3.2 Proposed Project

The Project facilities would disturb approximately 2,112 acres on the Reservation. The solar arrays, substation, and operations and maintenance (O&M) building and parking would be contained within a 2,000 acre solar facility footprint; the up to 500 kilovolt (kV) transmission line corridor would impact approximately 100 acres and have a length of approximately 5.50 miles; the water line would impact approximately 3 acres and have length of approximately 1-mile; the 12 kV transmission line would impact approximately 9 acres of land, half of which is currently an unimproved road, and have a length of approximately 3-miles. The Project location allows efficient connection of the energy from solar resources to existing transmission infrastructure. The selected site is adjacent to an existing Bureau of Land Management (BLM) managed utility corridor that has a direct path to the Crystal substation. The Crystal substation itself lies within 5 miles of the Project's northwest boundary (Figure 2).

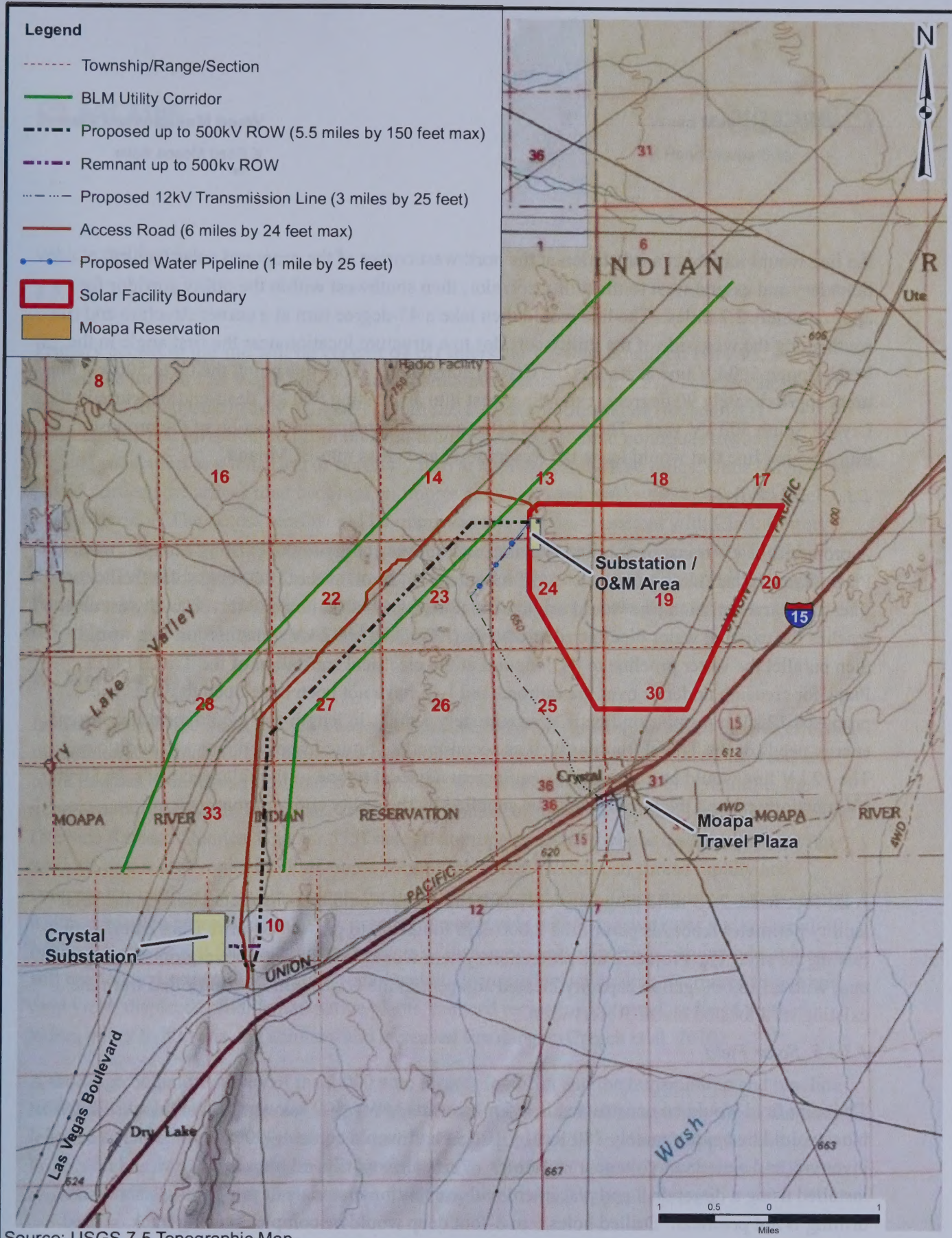
1.3.3 Project Components

1.3.3.1 Substation, Transmission Line and Interconnections

The Project includes the construction of one (1) on-site substation (within the 2,000 acre solar facility) that would encompass approximately 15 acres in total area. The substation would include medium- and high-voltage switchgear and conductor structures, and (up to 3) 34.5 kV/230 kV or 500 kV transformers (each approximately 50-foot wide by 25-foot long by 20-foot high).

1.3.3.2 Up to 500 kV Transmission Line

The up to 500 kV transmission line would exit the solar facility at the northwest corner and utilize the existing BLM 4,000-foot wide utility corridor on the Reservation for 5.0 miles to the southern Reservation boundary and then for 0.5 miles on BLM land towards and into the Crystal substation. It would parallel the existing Kern River Gas Transmission pipeline. Specifically,



Source: USGS 7.5 Topographic Map

ARCADIS	K Road Power San Diego, California K Road Moapa Solar Facility	Moapa River Indian Reservation Proposed Project Facilities Map	February 2012 FIGURE 2

Map Document:Austin\6923001\GIS\MXD\BLM Lands Figure 1

the line would initiate at a substation at the northwest corner of the proposed solar facility boundary and extend west to the utility corridor, then southwest within the utility corridor for approximately 2.7 miles. The line would then take a 45-degree turn at a corner structure and run south along the west side of the utility corridor to a structure location near the first angle in the McCullough 500 kV line as it exits the Crystal substation. From this point, the up to 500 kV line turns approximately 90 degrees, extending west into an existing 500 kV dead-end structure in the Crystal South 500 kV yard. There would be an approximate 0.5-mile section of the proposed transmission line that would leave the Reservation and cross into BLM land.

1.3.3.3 12 kV Transmission Line

A proposed 12 kV transmission line is planned to deliver energy to the existing Moapa Travel Plaza (Travel Plaza) located at exit 75 off Interstate 15, south of the 2,000-acre solar facility. The 12 kV transmission line would originate at the on-site substation and travel southwest until it reaches the existing water pipeline right-of-way (ROW). The 12 kV transmission line would then parallel the water pipeline to its endpoint at the electrical substation of the Travel Plaza. Plans for crossing under or over the railroad and I-15 have not been developed to date. The proposed 12 kV transmission line is approximately 3 miles in length and would meet the current energy needs of the Travel Plaza as well as accommodate future improvements and additions. The 12 kV line would be connected to equipment adjacent to one of the solar facility's 34.5/500 kV transformers and the power would be supplied by the utility entity of that system.

1.3.3.4 Fire Prevention

A 20-foot wide, 7.13-mile long, un-vegetated, fire break would be constructed outside the solar facility perimeter fence, as part of the 2,000 acre footprint, to prevent wildfire from entering or exiting the site. The Project's fire protection system would include one above-ground storage tank with a 150,000-gallon capacity located adjacent to the O&M building and filled from the existing well located on the Reservation.

1.3.3.5 Solar Field

The solar field would be constructed in 0.5 megawatt (MW) (500 kilowatt (KW)) blocks. Each block would be approximately 280 feet by 10 feet and would contain 900 solar modules, a set of inverters, and a medium voltage transformer. Vertical fixed tilt and tracker poles would be installed using a direct drill and placement with cementing materials or pre-cast ballasts where drilling is not practical. Drilled holes 6 to 8-foot deep would be completed using track or tired

vehicle drilling rigs.

1.3.3.6 Access Road

Primary access to the site will be via exit 64 off Interstate 15, west bound on Hwy 93, and an immediate turn on Las Vegas Blvd, a state-maintained frontage road. Las Vegas Boulevard is well paved for approximately 5.74 miles from the I-15 exit to the end of Nevada DOT maintenance and jurisdiction. From there an unimproved paved road continues towards the Crystal substation to a left-hand or northerly turn at approximately 1.96 miles. Once leaving the paved portion, the access road becomes an improved utility road within the 4,000-foot wide utility corridor. The access road would be improved to a design consistent with Clark County Department of Transportation guidelines and would terminate at the northwest corner of the Proposed Project boundary. The improved access road is approximately 5.90 miles in length from the Crystal substation location to the project site boundary access point where an improved 0.5-mile entrance onto the mesa would need to be constructed.

2. Weed Surveys

Invasive species are those species whose introduction to an area is likely to have negative effects to the economic, human, or environmental health of the area of introduction. A noxious weed is a plant that has been legally designated by the State of Nevada to be harmful to agriculture, the general public, or the environment. The Nevada Control of Insects, Pests and Noxious Weeds Act (Nevada Revised Statutes: Chapter 555) states that property owners whose land is infested with noxious weeds are required to implement control measures. Weeds can spread rapidly and compete aggressively with other plants for light, nutrients and water. Once invasive weeds inhabit a site, they often reproduce profusely, creating dense stands with extensive roots and soil seed banks that can persist for many years. Impacts of invasive weeds in Nevada can include: increased soil erosion and salinity, increased flood potential, decreased water quality, decreased forage and crop yield, displaced wildlife and native plants, reduced recreation potential, reduced aesthetic value, injury to humans and animals, and increased fire danger (Creech et al. 2010).

A thorough botanical survey of the 2,000 acre Project footprint and the transmission and pipeline ROW will be conducted prior to the first stage of construction as well as a survey along the entire length of the BLM utility corridor by a qualified biologist in order to identify species within the Project area and its surrounding areas that are listed in **Appendix A** as well as cheatgrass (*Bromus tectorum*) and grass species (*Schismus* spp.) and any other invasive species present.

The Nevada Control of Insects, Pests and Noxious Weeds Act (Nevada Revised Statutes: Chapter 555) grants the Director of the Nevada Department of Agriculture the authority to investigate and control noxious weeds The state list of noxious weeds is presented in **Appendix A**, which also includes noxious weeds listed by federal agencies (NDA 2011). These statutes would only apply to BLM managed lands and not upon the Reservation.

The Project Proponents, BLM, and other federal, state and local agencies recognize that species, such as cheatgrass and *Schismus*, are not considered feasible for eradication because of the widespread distribution, but are still to be mitigated for so as to not increase the severity of infestation. In addition, the Proponent's objective is to prevent the spread of invasive weed species, and treat selected areas within the Project where target species are problematic.

The preventive measures identified in Section 3.2 will be implemented throughout the Project area and at all of the proposed facilities as well as the immediately surrounding areas to minimize the spread of invasive weed species during construction activities.

3. Weed Management

The BLM has regulatory requirements for weed management that will be met along the utility road expansions within the BLM ROW as well as within the 2,000 acre Project footprint and along the transmission and pipeline ROW. Basic preventive measures required of contractors for the Project are noted in Section 3.4. Implementation of preventive measures to control the spread of invasive weeds is the most cost-effective weed management approach.

3.1 Identification of Problem Areas

Prior to construction, information and training regarding weed management, identification, and impacts on agriculture, livestock, and wildlife will be conveyed to the contractors. The importance of preventing the spread of invasive weeds in non-infested areas, and controlling the proliferation of weeds already present, will be discussed.

Surveys would consist of walking transects through all areas of proposed disturbance described in Section 1.0, identifying locations of species that are listed in **Appendix A** as well as cheatgrass, *Schismus* and other invasive species. Infested areas will be recorded using Global Positioning System (GPS) equipment to document locations of disturbance. An information report and map will be delivered to the BLM Weed Management Specialist that indicates the survey results prior to the beginning of construction activities.

Locations of invasive weed infestations marked with a GPS prior to and during construction will be flagged in the field by qualified biologists. The flagging will alert construction personnel and prevent access into areas until weed management control measures have been implemented.

3.2 Preventive Measures

The following preventive measures will be implemented to prevent the spread of invasive weeds:

- All contractor apparel, vehicles and equipment will be cleaned prior to arrival at the work site, as well as before exiting the work site using power or high pressure equipment at designated cleaning sites. The wash down will concentrate on tracks, feet, or tires and the undercarriage, with special emphasis on axles, frame, cross members, motor mounts, and underneath steps, running boards, and front bumper/brush guard assemblies.
- Vehicle cabs will be swept out and refuse will be disposed of in waste receptacles. The contractor, with an environmental inspector (EI) oversight, will ensure that vehicles and equipment are free of soil and debris capable of transporting invasive weed seeds, roots, or rhizomes before the vehicles and equipment are allowed use of access roads. The contractor will use compressed air to remove seeds, roots, and rhizomes from the equipment before transport off site.
- The contractor will ensure that straw or hay bales used for sediment barrier installations or mulch distribution are certified weed free.
- Revegetation efforts will continue to ensure adequate vegetative cover to minimize the potential for weed invasion.
- The Contractor will use certified weed-free seed mixes during revegetation of disturbed areas. (NRS 587.111 "all seed shipped or sold within Nevada is to be free of noxious weed seeds.")
- The Contractor will restrict vehicle traffic to defined roads or overland travel routes to reduce potential mechanical transport of invasive weed seeds.

3.3 Treatment Methods

The Project Proponents will implement weed control measures that will be in accordance with existing regulations and jurisdictional land management agencies. Before construction begins appropriate control methods will be determined and applied to identified infestations to reduce the

spread or proliferation of weeds during construction and operation. Herbicides that are approved by the BLM and Tribe may be applied to identified weed infestations on tribal and BLM lands in areas fenced off to desert tortoise travel. Because there are no herbicides approved to be used within desert tortoise habitat, only mechanical treatment methods will be applied in those areas.

Mechanical treatment methods rely on equipment that is used to mow weed populations, or hand pulling of sprouted weeds. If such a method is used, subsequent seeding will be conducted to re-establish a desirable vegetative cover that will stabilize the soils and slow the potential re-invasion of invasive weeds. Seed selection will be based on site-specific conditions and the appropriate seed mix identified for those conditions. Mechanical treatments that would disturb the soil surface within native habitats will be avoided when possible.

Herbicide application is an effective means of reducing the size of invasive weed populations. Prior to application of herbicides, a Pesticide use Proposal will be sent to the BLM for approval. Chemical application will be controlled, as described in Section 5.1, to minimize the impacts on surrounding vegetation. Immediately following application of herbicides, a Pesticide Application Report will be completed and submitted to the BLM Weed Specialist within 7 days.

The timing of subsequent re-vegetation efforts will be based on the life of the selected herbicide. Treatment methods will be based on species-specific and area-specific conditions and will be coordinated with the local regulatory offices and the Bureau of Indian Affairs (BIA). All undesirable vegetation will be eradicated before seeding. A certified biologist would complete treatment of invasive weed species.

3.4 Agency Specific Requirements

3.4.1 Bureau of Land Management Lands

The Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (2007) lists 14 herbicide active ingredients acceptable for use on BLM lands. The currently approved adjuvants and herbicide formulas listed in **Appendix B** are subject to change.

3.4.2 Nevada Revised Statute (NRS): The Nevada Control of Insects, Pests, and Noxious Weed Act

3.4.2.1 NRS 555.150: Eradication of noxious weeds by owner or occupant of land

Every railroad, canal, ditch or water company, and every person owning, controlling or occupying lands in this State, and every county, incorporated city or district having the supervision and control over streets, alleys, lanes, rights-of-way, or other lands, shall cut, destroy or eradicate all weeds declared and designated as noxious as provided in NRS 555.130, before such weeds propagate and spread, and whenever required by the State Quarantine Officer. [Part 1:174:1929; NCL § 414]

3.4.2.2 NRS 555.210: Performance of necessary work by weed control officer on failure by landowner; charges as lien.

If any landowner fails to carry out a plan of weed control for his or her land in compliance with the regulations of the district, the weed control officer may enter upon the land affected, perform any work necessary to carry out the plan, and charge such work against the landowner. Any such charge, until paid, is a lien against the land affected coequal with a lien for unpaid general taxes, and may be enforced in the same manner [2.5:174:1929; added 1949, 560; 1943 NCL § 415.01]—(NRS A 1969, 518). This regulation is only applicable to that part of the Project solely on BLM lands and does not pertain to Reservation Land.

3.4.3 BLM Las Vegas Field Office Weed Management Plan

The Las Vegas Field Office of the BLM prepared this document as guidance for weed management programs. The methods originated from a cooperative effort between BLM and other Federal agencies which produced the document, Partners-Against Weeds.

These regulations and guidelines will be followed and implemented on all areas of proposed disturbance throughout the Project, Tribal and BLM lands, as well as the immediately surrounding areas to prevent the infestation and spread of invasive weed species.

4. Monitoring

Monitoring of invasive weeds will be conducted by qualified biologists on all areas of proposed disturbance throughout the Project as well as the immediately surrounding areas during reclamation monitoring, on an ongoing basis, as well as on an annual basis in areas of known

infestations during periods of annual plant growth when invasive weed species are easily identified. Upon identification of infestation, a qualified biologist will determine what action is necessary, and treatment measures will be implemented accordingly.

4.1 Post-Construction Monitoring

Monitoring will begin immediately following construction. Invasive weed monitoring would occur biannually for approximately 5 years, or until restoration is complete. The Project Proponents will document their observations following the above noted invasive weed inventory and make these monitoring reports available to all necessary agencies.

A windshield survey for State of Nevada noxious weed species, as well as any other invasive weed species, would be conducted by a qualified biologist along the entire length of the BLM utility corridor prior to and following the initial disturbance to identify infestations and confirm successful reclamation has been achieved. Successful reclamation is determined through the Nevada Guidelines for Successful Revegetation for the Nevada Division of Environmental Protection, the Bureau of Land Management and the U.S. Department of Agriculture Forest Service.

Any areas where an infestation of invasive weed is noted, particularly in previously unaffected areas, would be further evaluated to determine if these areas require remedial action and additional treatment. Proponents will report such areas to the appropriate agencies and BIA, and will record any additional weed control treatments. A report summarizing ROW stability, re-vegetation progress, percent cover, and weed infestation will be provided every 2 years to the BLM and BIA.

4.2 Ongoing Monitoring

Weed control will occur on a case-by-case basis and include a summary of actions taken in the Post-Construction Monitoring Report (above). Furthermore, operations personnel will be trained in the identification of predominant invasive weed populations and will report spreads of invasive weeds during the normal course of maintenance. Therefore, the Project area is essentially monitored on an ongoing basis.

4.3 Monitoring of Known Infestation Areas

In addition to biannual and ongoing invasive weed monitoring, Proponents will conduct annual site visits to monitor known infestation areas. Proponents will continue to visit these infestation areas until invasive weeds in the area are eliminated.

5. Herbicide Application, Handling, Spills, and Cleanup

5.1 Herbicide Application

Herbicide application will be based on information gathered from the area BLM offices. Before application, Proponents or their contractors will obtain any required permits from Federal, State, or local authorities. Permits may contain additional terms and conditions that go beyond the scope of this weed management plan. A licensed contractor will perform the application in accordance with applicable laws and regulations and permit stipulations.

All herbicide applications must follow United States Environmental Protection Agency (EPA) label instructions. Application of herbicides will be suspended when any of the following conditions exists:

- Wind velocity exceeds 6 miles per hour (mph) during application of liquids or 15 mph during application of granular herbicides;
- Snow or ice covers the foliage of invasive weeds;
- Precipitation is occurring or is imminent.

Vehicle-mounted sprayers will be used mainly along access roads and ROWs. Hand application methods that target individual plants will be used to treat small or scattered weed populations in rough terrain. Calibration checks of equipment will be conducted at the beginning of spraying and periodically to ensure that proper application rates are achieved.

Herbicides will be transported to the Project site with the following provisions:

- Only the quantity needed for that day's work will be transported.
- Concentrate will be transported in approved containers only and in a manner that will prevent tipping or spilling, and in a location that is isolated from the vehicle's driving compartment, food, clothing, and safety equipment.

- Mixing will be done off site or within the O&M area, over a drip catching device and at a distance greater than 200 feet from open or flowing water, wetlands, or other sensitive resources.
- No herbicides will be applied at the above sensitive areas unless authorized by appropriate regulatory agencies, and all herbicide equipment and containers will be inspected for leaks daily.
- Disposal of spent containers will be in accordance with the herbicide label.

5.2 Herbicide Spills and Cleanup

All reasonable precautions will be taken to avoid herbicide spills. In the event of a spill, cleanup will be immediate. Contractors will keep spill kits in their vehicles and in herbicide storage areas to allow for quick and effective response to spills. Items to be included in the spill kit are: personal protective equipment (PPE), absorptive clay, "kitty litter," or other commercial absorptive, plastic bags and bucket, shovel, fiber brush and screw-in handle, dust pan, caution tape, highway flares (use on established roads only), and detergent, also in accordance with the herbicide label.

Response to a herbicide spill will vary with the size and location of the spill, but general procedures include: BLM and BIA notification, traffic control, dressing the clean-up team in protective clothing, stopping the leaks, containing the spilled material, cleaning up and removing the spilled herbicide and contaminated absorptive material and soil, and transporting the spilled pesticide and contaminated material to an authorized disposal site.

5.3 Worker Safety and Spill Reporting

All herbicide contractors will be state certified to apply pesticides and obtain and have readily available copies of the appropriate material safety data sheets for the herbicides used. All herbicide spills will be reported in accordance with applicable laws and requirements.

6. References

Benson & Darrow. 1981. Trees and shrubs of the southwestern deserts. The University of Arizona Press, Tucson, Arizona.

Bureau of Land Management (BLM). 2006. Noxious Weed Plan. U.S. Bureau of Land Management, Las Vegas Field Office.

Creech, E., B. Schultz, and L. Blecker. 2010. Nevada Noxious Weed Field Guide. University of Nevada Cooperative Extension. Available at http://www.unce.unr.edu/publications/files/nr/2010/sp1001.pdf . Accessed November 17, 2011.

Longwell, C. R., Pampeyan, E.H., Boweyer, B., and Roberts, R.J. 1965, Geology and mineral deposits of Clark County, Nevada: Nevada Bureau of Mines and Geology Bulletin 62, 218p.

Nevada Department of Agriculture, Plant Industry Division. 2011. Noxious Weeds List. Available at http://agri.nv.gov/nwac/PLANT_NoxWeedList.htm. Accessed February 1, 2011.

United States Department of the Interior (USDI), Bureau of Land Management. 2007. Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement.

United States Department of Agriculture (USDA). 2000. Environmental Assessment for Noxious Weed Management, Dixie National Forest. Forest Service, Intermountain Region.

This page intended to be blank.

APPENDIX A

State and Federally designated noxious weed species of the State of Nevada

This page intended to be blank.

Common Name	Scientific Name	State of Nevada	BLM Elko District	BLM Winnemucca District	BLM Surprise Field Office
African rue	*Peganum harmala*	A		NS	
Austrian fieldcress	*Rorippa austriaca*	A		NS	
Austrian peaweed	*Sphaerophysa salsula / Swainsona salsula*	A		NS	
Camelthorn	*Alhagi pseudalhagi*	A		NS	
Black henbane	*Hyoscyamus niger*	A	X	NS	
Camelthorn	*Alhagi camelorum*	A		NS	
Common crupina	*Crupina vulgaris*	A		NS	
Dalmation toadflax	*Linaria dalmatica*	A	X	NS	
Dyer's woad	*Isatis tinctoria*	A	X	NS	X
Eurasian water-milfoil	*Myriophyllum spicatum*	A		NS	
Giant reed	*Arundo donax*	A		NS	
Giant salvinia	*Salvinia molesta*	A		NS	
Goats rue	*Galega officinalis*	A		NS	
Green fountain grass	*Pennisetum setaceum*	A		NS	
Houndstongue	*Cynoglossum officinale*	A	X	NS	
Hydrilla	*Hydrilla verticillata*	A		NS	
Iberian star thistle	*Centaurea iberica*	A		NS	
Klamath weed	*Hypericum perforatum*	A	X	NS	
Malta star thistle	*Centaurea melitensis*	A		NS	
Mayweed chamomile	*Anthemis cotula*	A		NS	
Mediterranean sage	*Salvia aethiopis*	A		NS	X
Purple loosestrife	*Lythrum salicaria, L.virgatum*	A		NS	
Purple star thistle	*Centaurea calcitrapa*	A		NS	
Rush skeletonweed	*Chondrilla juncea*	A		NS	
Sow thistle	*Sonchus arvensis*	A		NS	
Spotted knapweed	*Centaurea masculosa*	A	X	NS	X
Squarrose star thistle	*Centaurea virgata Lam. Var. squarrose*	A	X	NS	
Sulfur cinquefoil	*Potentilla recta*	A	X	NS	
Syrian bean caper	*Zygophyllum fabago*	A		NS	
Yellow starthistle	*Centaurea solstiltialis*	A	X	NS	X

Yellow toadflax	*Linaria vulgaris*	A	X	NS	
Carolina horse-nettle	*Solanum carolinense*	B		NS	
Diffuse knapweed	*Centaurea diffusa*	B	X	NS	X
Leafy spurge	*Euphorbia esula*	B	X	NS	
Medusahead	*Taeniatherum caput-medusae*	B	X	NS	
Musk thistle	*Carduus nutans*	B	X	NS	X
Russian knapweed	*Acroptilon repens*	B	X	NS	X
Sahara mustard	*Brassica tournefortii*	B		NS	
Scotch thistle	*Onopordum acanthium*	B	X	NS	X
White horse-nettle	*Solanum elaeagnifolium*	B		NS	
Canada thistle	*Cirsium arvense*	C	X	NS	X
Hoary cress	*Cardaria draba*	C	X	NS	X
Johnson grass	*Sorghum halepense*	C		NS	
Perennial pepperweed	*Lepidium latifolium*	C	X	NS	X
Poison hemlock	*Conium maculatum*	C	X	NS	
Puncture vine	*Tribulus terrestris*	C		NS	X
Salt cedar (tamarisk)	*Tamarix spp*	C	X	NS	
Water hemlock	*Cicuta maculata*	C	X	NS	
Bull thistle(a)	*Cirsium vulgare*		X		X
Halogeton(a)	*Halogeton glomeratus*		X		X

Note:

(a) Not listed as a State noxious weed; however, identified as a species of particular concern by relevant local management agencies.
(b) Species likely to occur as specified by relevant local management agencies.

Key:

BLM = Bureau of Land Management.
NS = None specified: Agency coordination to date has not specified any weed species of particular concern in this management area.

State classification codes:

A = Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; **control required by the state in all infestations.**

B = Weeds established in scattered populations in some counties of the state; actively excluded where possible; **control required by the state in areas where populations are not well established or previously unknown to occur.**

C = Weeds currently established and generally widespread in many counties of the state; **abatement at the discretion of the state quarantine officer.**

Sources:

http://agri.nv.gov/nwac/PLANTNoxWeedList.htm
http://plants.usda.gov/java/noxious?rptType=State&statefips=32

APPENDIX B

BLM approved adjuvant and herbicide formulas

This page intended to be blank.

Adjuvants Approved for Use on BLM Administered Lands

Beureau of Land Management
Update: June 30, 2011

Adjuvant Class	Adjuvant Type	Trade Name	Manufacturer	Comments
Surfactant	Non-ionic	Agrisolutions Preference	Agriliance, LLC.	WA Reg. No. 1381-50011
		A-90	Alligare, LLC	
		Aqufact	Aqumix, Inc.	
		Brewer 90-10	Brewer International	
		Baron	Crown (Estes Incorporated)	
		N.I.S. 80	Estes Incorporated	
		Inlet	Helena Chemical Company	CA Reg. No. 5905-50099-AA
		Spec 90/10	Helena Chemical Company	
		Optima	Helena Chemical Company	CA Reg. No. 5905-50075-AA
		Induce	Setre (Helena)	CA Reg. No. 5905-50066-AA
			Helena Chemical Company	CA Reg. No. 5905-50091-AA
		Activator 90	Loveland Products Inc.	CA Reg. No. 34704-50034-AA
		LI-700	Loveland Products Inc.	CA Reg. No. 34704-50035
				WA Reg. No. AW36208-70004
		Spreader 90	Loveland Products Inc.	WA Reg. No. 34704-05002-AA
		UAP Surfactant 80/20	Loveland Products Inc.	
		X-77	Loveland Products Inc.	CA Reg. No. 34704-50044
		Elite Platinum	Red River Specialties, Inc.	
		Red River 90	Red River Specialties, Inc.	
		Red River NIS	Red River Specialties, Inc.	
		Cornbelt Premier 90	Van Diest Supply Co.	
		Cornbelt Trophy Gold	Van Diest Supply Co.	
		Spray Activator 85	Van Diest Supply Co.	
		R-900	Wilbur-Ellis	
		Super Spread 90	Wilbur-Ellis	WA Reg. No. AW-2935-70016
		Super Spread 7000	Wilbur-Ellis	CA Reg. No. 2935-50170
				WA Reg. No. AW-2935-0002
		Agrisolutions Activate Plus	Winfield Solutions, LLC	CA Reg. No. 9779-50004-AA
				WA Reg. No. 1381-09001
		Agrisolutions Preference	Winfield Solutions, LLC	WA Reg. No. 1381-50011

Adjuvant Class	Adjuvant Type	Trade Name	Munufacturer	Comments
Surfactant (cont.)	Spreader/Sticker	Agri-Trend Spreader	Agri-Trend	
		TopFilm	Biosorb, Inc.	
		Bind-It	Estes Incorporated	
		Surf-King PLUS	Crown (Estes Incorporated)	
		CWC 90	CWC Chemical, Inc.	
		Cohere	Helena Chemical Company	CA Reg. No. 5905-50083-A
		Attach	Loveland Products Inc.	CA Reg. No. 34704-50026
		Bond	Loveland Products Inc.	CA Reg. No. 36208-50005
		Tactic	Loveland Products Inc.	CA Reg. No. 34704-50041-AA
		Nu-Film-IR	Miller Chem. & Fert. Corp.	
		Nu Film 17	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50021-AA
		Nu Film P	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50022-AA
		Lastick	Setre (Helena)	
		Insist 90	Wilbur-Ellis	
		R-56	Wilbur-Ellis	CA Reg. No. 2935-50144
	Silicone-based	SilEnergy	Brewer International	
		Silnet 200	Brewer International	
		Bind-It MAX	Estes Incorporated	
		Thoroughbred	Estes Incorporated	
		Aero Dyne-Amic	Helena Chemical Company	CA Reg. No. 5905-50080-AA
		Dyne-Amic	Helena Chemical Company	CA Reg. No. 5095-50071-AA
		Kinetic	Setre (Helena)	CA Reg. No. 5905-50087-AA
		Freeway	Loveland Products Inc.	CA Reg. No. 34704-50031
				WA Reg. No. 34704-04005
		Phase	Loveland Products Inc.	CA Reg. No. 34704-50037-AA
		Phase II	Loveland Products Inc.	
		Silwet L-77	Loveland Products Inc.	CA Reg. No. 34704-50043
		Elite Marvel	Red River Specialties, Inc.	
		Sun Spreader	Red River Specialties, Inc.	
		Sylgard 309	Wilbur-Ellis	CA Reg. No. 2935-50161
		Syl-Tac	Wilbur-Ellis	CA Reg. No. 2935-50167

Adjuvant Class	Adjuvant Type	Trade Name	Munufacturer	Comments
Oil-based	Crop Oil Concentrate	Alligare Forestry Oil	Alligare, LLC	
		Brewer 83-17	Brewer International	
		Majestic	Crown (Estes Incorporated)	
		Agri-Dex	Helena Chemical Company	CA # 5905-50094-AA
		Crop Oil Concentrate	Helena Chemical Company	CA Reg. No. 5905-50085-AA
		Power-Line Crop Oil	Land View Inc.	
		Crop Oil Concentrate	Loveland Products Inc.	
		Maximizer Crop Oil Conc.	Loveland Products Inc.	CA Reg. No. 34704-50059
				WA Reg. No. 34704-08002
		Herbimax	Loveland Products Inc.	CA Reg. No. 34704-50032-AA
				WA Reg. No. 34704-04006
		Red River Forestry Oil	Red River Specialties, Inc.	
		Red River Pacer Crop Oil	Red River Specialties, Inc.	
		Cornbelt Crop Oil Concentrate	Van Diest Supply Co.	
		Cornbelt Premium Crop Oil Concentrate	Van Diest Supply Co.	
		R.O.C. Rigo Oil Conc.	Wilbur-Ellis	
		Mor-Act	Wilbur-Ellis	CA Reg. No. 2935-50098
		Agrisolutions Prime Oil	Winfield Solutions, LLC	CA Reg. No. 979-50002-AA
		Agrisolutions Superb HC	Winfield Solutions, LLC	WA Reg. No. 1381-06003
	Methylated Seed Oil	MSO Concentrate	Alligare, LLC	
		SunEnergy	Brewer International	
		Sun Wet	Brewer International	
		Premium MSO	Helena Chemical Company	
		Methylated Spray Oil Conc.	Helena Chemical Company	
		MSO Concentrate	Loveland Products Inc.	CA Reg. No. 34704-50029-AA
		Elite Supreme	Red River Specialties, Inc.	
		Red River Supreme	Red River Specialties, Inc.	
		Sunburn	Red River Specialties, Inc.	
		Sunset	Red River Specialties, Inc.	
		Cornbelt Base	Van Diest Supply Co.	
		Cornbelt Methylates Soy-Stik	Van Diest Supply Co.	
		Hasten	Wilbur-Ellis	CA Reg. No. 2935-50160
				WA Reg. No. 2935-02004
		Super Spread MSO	Wilbur-Ellis	
		Agrisolutions Destiny HC	Winfield Solutions, LLC	WA Reg. No. 1381-09002

Adjuvant Class	Adjuvant Type	Trade Name	Munufacturer	Comments
Oil-Based (cont.)	Methylated Seed Oil + Organosilicone	Inergy	Crown (Estes Incorporated)	
	Vegetable Oil	Noble	Estes Incorporated	
		Amigo	Loveland Products Inc.	CA Reg. No. 34704-50028-AA
				WA Reg. No. 34704-04002
		Elite Natural	Red River Specialities	
		Competitor	Wilbur-Ellis	CA Reg. No. 2935-50173
				WA Reg. No. AW-2935-04001
Fertilizer-based	Nitrogen-based	Quest	Setre (Helena)	CA Reg. No. 5905-50076-AA
		Quest	Helena Chemical Company	CA Reg. No. 5905-50076-AA
		Actamaster Spray Adjuvant	Loveland Products Inc.	WA Reg. No. 34704-50006
		Actamaster Soluble Spray Adjuvant	Loveland Products Inc.	WA Reg. No. 34704-50001
		Dispatch	Loveland Products Inc.	
		Dispatch 111	Loveland Products Inc.	
		Dispatch 2N	Loveland Products Inc.	
		Dispatch AMS	Loveland Products Inc.	
		Flame	Loveland Products Inc.	
		Cornbelt Gardian	Van Diest Supply Co.	
		Cornbelt Gardian Plus	Van Diest Supply Co.	
		Bronc	Wilbur-Ellis	
		Bronc Max	Wilbur-Ellis	
		Bronc Max EDT	Wilbur-Ellis	
		Bronc Plus Dry EDT	Wilbur-Ellis	WA Reg. No.2935-03002
		Agrisolutions Alliance	Winfield Solutions, LLC	CA Reg. No. 1381-50002-AA
				WA Reg. No.1381-05005
		Agrisolutions Class Act NG	Winfield Solutions, LLC	WA Reg. No. 1381-01004
		Agrisolutions Corral AMS Liquid	Winfield Solutions, LLC	WA Reg. No. 1381-01006
		Bronc Total	Wilbur-Ellis	
		Cayuse Plus	Wilbur-Ellis	CA Reg. No. 2935-50171
Special Purpose or Utility	Buffering Agent	Buffers P.S.	Helena Chemical Company	CA Reg. No. 5905-50062-ZA
		Spray-Aide	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50006-AA
		Oblique	Red River Specialties, Inc.	

Adjuvant Class	Adjuvant Type	Trade Name	Munufacturer	Comments
		Tri-Fol	Wilbur-Ellis	CA Reg. No. 2935-50152
Special Purpose	Colorants	Hi-Light	Becker-Underwood	
or Utility - cont.		Hi-Light WSP	Becker-Underwood	
		Spray Indicator XL	Helena Chemical Company	
		Marker Dye	Loveland Products Inc.	
		TurfTrax	Loveland Products Inc.	
		TurfTrax Blue Spray Indicator	Loveland Products Inc.	
		BullsEye	Milliken Chemical	
		Signal	Precision	
		SPI-Max Blue Spray Marker	PROKoZ	
		Elite Splendor	Red River Specialities, Inc.	
	Compatibility/	E Z MIX	Loveland Products Inc.	CA Reg. No. 36208-50006
	Suspension	Support	Loveland Products Inc.	WA Reg. No. 34704-04011
	Agent	Blendex VHC	Setre (Helena)	
	Deposition Aid	Cygnet Plus	Brewer International	CA Reg. No. 1051114-50001
		Poly Control 2	Brewer International	
		CWC Sharpshooter	CWC Chemical, Inc.	
		Grounded	Helena Chemical Company	
		Grounded - CA	Helena Chemical Company	CA Reg. No. 5905-50096-AA
		ProMate Impel	Helena Chemical Company	
		Pointblank	Helena Chemical Company	CA Reg. No. 52467-50008-AA-5905
		Strike Zone DF	Helena Chemical Company	CA Reg. No. 5905-50084-AA
		Compadre	Loveland Products Inc.	CA Reg. No. 34704-50050
				WA Reg. No. 34704-06004
		Intac Plus	Loveland Products Inc.	
		Liberate	Loveland Products Inc.	CA Reg. No. 34704-50030-AA
				WA Reg. No. 34704-04008
		Reign	Loveland Products Inc.	CA Reg. No. 34704-50045
				WA Reg. No. 34704-05010
		Weather Gard	Loveland Products Inc.	CA Reg. No. 34704-50042-AA
		Mist-Control	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50011-AA
		Sustain	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50015-AA
		Exit	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50014-AA
		Elite Secure Ultra	Red River Specialties, Inc.	

Adjuvant Class	Adjuvant Type	Trade Name	Munufacturer	Comments
		Secure Ultra	Red River Specialties, Inc.	
Special Purpose or Utility - cont.	Deposition Aid - cont.	Sta Put	Setre (Helena)	CA Reg. No. 5905-50068-AA
		Agripharm Drift Control	Walco International	
		Bivert	Wilbur-Ellis	CA Reg. No. 2935-50163
		Coverage G-20	Wilbur-Ellis	
		Crosshair	Wilbur-Ellis	
		EDT Concentrate	Wilbur-Ellis	
		Agrisolutions Interlock	Winfield Solutions, LLC	
	Defoaming Agent	Defoamer	Brewer International	
		Foambuster Max	Helena Chemical Company	
		Fighter-F 10	Loveland Products Inc.	
		Fighter-F Dry	Loveland Products Inc.	
		Foam Fighter	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50005-AA
		Red River Defoamer	Red River Specialities, Inc.	
		Foam Buster	Setre (Helena)	CA Reg. No. 5905-50072-AA
		Cornbelt Defoamer	Van Diest Supply Co	
		No Foam	Wilbur-Ellis	CA Reg. No. 2935-50136
	Diluent/Deposition Agent	Improved JLB Oil Plus	Brewer International	
		JLB Oil Plus	Brewer International	
		Hy-Grade I	CWC Chemical, Inc	
		Hy-Grade EC	CWC Chemical, Inc	
		Red River Basal Oil	Red River Specialties, Inc.	
		In-Place	Wilbur-Ellis	CA Reg. No. 2935-50169
		W.E.B. Oil	Wilbur-Ellis	CA Reg. No. 2935-50166
				WA Reg. No. AW 2935-70023
	Foam Marker	Align	Helena Chemical Company	
		Red River Foam Marker	Red River Specialties, Inc.	
		R-160	Wilbur-Ellis	
	Invert Emulsion Agent	Redi-vert II	Wilbur-Ellis	CA Reg. No. 2935-50168
	Tank Cleaner	Wipe Out	Helena Chemical Company	
		All Clear	Loveland Products Inc.	
		Tank and Equipment Cleaner	Loveland Products Inc.	

Adjuvant Class	Adjuvant Type	Trade Name	Munufacturer	Comments
		Red River Tank Cleaner	Red River Specialties, Inc.	
Special Purpose	Tank Cleaner cont.	Kutter	Wilbur-Ellis	
or Utility - cont.		Neutral-Clean	Wilbur-Ellis	
		Cornbelt Tank-Aid	Van Diest Supply Co.	
	Water Conditioning	Rush	Crown (Estes Incorporated)	
		AccuQuest WM	Helena Chemical Company	
		Hel-Fire	Helena Chemical Company	
		Blendmaster	Loveland Products Inc.	
		Choice	Loveland Products Inc.	CA Reg. No. 34704-50027-AA
				WA Reg. No. 34704-04004
		Choice Xtra	Loveland Products Inc.	
		Choice Weather Master	Loveland Products Inc.	CA Reg. No. 34704-50038-AA
		Elite Imperial	Red River Specialities, Inc.	
		Cornbelt N-Tense	Van Diest Supply Co.	
		Climb	Wilbur-Ellis	CA Reg. No. 2935-50181
				WA Reg. No. 2935-09001
		Cut-Rate	Wilbur-Ellis	

*Herbicides Approved for Use on BLM Lands**

Bureau of Land Management

Update June 30, 2011

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Bromacil	AK, AZ, CA, CO, ID, MT, ND,	Bromacil 80DF	Alligare, LLC	81927-4	Y
	NE, NM, NV, OK, SD, TX, UT,	Hyvar X	DuPont Crop Protection	352-287	Y
	WA, WY	Hyvar XL	DuPont Crop Protection	352-346	Y
Bromacil + Diuron	AK, AZ, CA, CO, ID, MT, ND,	Bromacil/Diuron 40/40	Alligare, LLC	81927-3	Y
	NE, NM, NV, OK, SD, TX, UT,	Krovar I DF	DuPont Crop Protection	352-505	Y
	WA, WY	Weed Blast Res. Weed Cont.	Loveland Products Inc.	34704-576	N
		DiBro 2+2	Nufarm Americas Inc.	228-227	Y
		DiBro 4+4	Nufarm Americas Inc.	228-235	N
		DiBro 4+2	Nufarm Americas Inc.	228-386	N
		Weed Blast 4G	SSI Maxim	34913-19	N
Chlorsulfuron	AK, AZ, CA, CO, ID, MT, ND,	Alligare Chlorsulfuron	Alligare, LLC	81927-43	N
	NE, NM, NV, OK, SD, TX, UT,	Telar DF	DuPont Crop Protection	352-522	Y
	WA, WY	Telar XP	DuPont Crop Protection	352-654	Y
		NuFarm Chlorsulf SPC 75 WDG Herbicide	Nufarm Americas Inc.	228-672	N
		Chlorsulfuron E-Pro 75 WDG	Nufarm Americas Inc.	79676-72	N
Clopyralid	AK, AZ, CA, CO, ID, MT, ND,	Spur	Albaugh, Inc.	42750-89	Y
	NE, NM, NV, OK, SD, TX, UT,	Pyramid R&P	Albaugh, Inc.	42750-94	N
	WA, WY	Clopyralid 3	Alligare, LLC	42750-94-81927	Y
		Cody Herbicide	Alligare, LLC	81927-28	Y
		Reclaim	Dow AgroSciences	62719-83	N
		Stinger	Dow AgroSciences	62719-73	Y
		Transline	Dow AgroSciences	62719-259	Y
		CleanSlate	Nufarm Americas Inc.	228-491	Y

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Clopyralid +	AK, AZ, CA, CO, ID, MT, ND,	Commando	Albaugh, Inc.	42750-92	N
2,4-D	NE, NM, NV, OK, SD, TX, UT,	Curtail	Dow AgroSciences	62719-48	N
	WA, WY	Cutback	Nufarm Americas Inc.	71368-72	N
2,4-D	AK, AZ, CA, CO, ID, MT, ND,	Agrisolution 2,4-D LV6	Agriliance, L.L.C.	1381-101	N
	NE, NM, NV, OK, OR, SD, TX,	Agrisolution 2,4-D Amine 4	Agriliance, L.L.C.	1381-103	N
	UT, WA, WY	Agrisolution 2,4-D LV4	Agriliance, L.L.C.	1381-102	N
		2,4-D Amine 4	Albaugh, Inc./Agri Star	42750-19	Y
		2,4-D LV 4	Albaugh, Inc./Agri Star	42750-15	Y
		Solve 2,4-D	Albaugh, Inc./Agri Star	42750-22	Y
		2,4-D LV 6	Albaugh, Inc./Agri Star	42750-20	N
		Five Star	Albaugh, Inc./Agri Star	42750-49	N
		D-638	Albaugh, Inc./Agri Star	42750-36	N
		Alligare 2,4-D Amine	Alligare, LLC	81927-38	N
		2,4-D LV6	Helena Chemical Company	4275-20-5905	N
		2,4-D Amine	Helena Chemical Company	5905-72	N
		2,4-D Amine 4	Helena Chemical Company	42750-19-5905	N
		Opti-Amine	Helena Chemical Company	5905-501	N
		Barrage HF	Helena Chemical Company	5905-529	N
		HardBall	Helena Chemical Company	5905-549	N
		Unison	Helena Chemical Company	5905-542	N
		Clean Amine	Loveland Products Inc.	34704-120	N
		Low Vol 4 Ester Weed Killer	Loveland Products Inc.	34704-124	N
		Low Vol 6 Ester Weed Killer	Loveland Products Inc.	34704-125	N
		Saber	Loveland Products Inc.	34704-803	N
		Salvo	Loveland Products Inc.	34704-609	N
		Savage DS	Loveland Products Inc.	34704-606	Y
		Aqua-Kleen	Nufarm Americas Inc.	71368-4	N
		Aqua-Kleen	Nufarm Americas Inc.	228-378	N
		Esteron 99C	Nufarm Americas Inc.	62719-9-71368	N
		Weedar 64	Nufarm Americas Inc.	71368-1	Y
		Weedone LV-4	Nufarm Americas Inc.	228-139-71368	Y
		Weedone LV-4 Solventless	Nufarm Americas Inc.	71368-14	Y

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
2,4-D - cont.	AK, AZ, CA, CO, ID, MT, ND,	Weedone LV-6	Nufarm Americas Inc.	71368-11	Y
	NE, NM, NV, OK, OR, SD, TX,	Formula 40	Nufarm Americas Inc.	228-357	Y
	UT, WA, WY	2,4-D LV 6 Ester	Nufarm Americas Inc.	228-95	Y
		Platoon	Nufarm Americas Inc.	228-145	N
		WEEDstroy AM-40	Nufarm Americas Inc.	228-145	Y
		Hi-Dep	PBI Gordon Corp.	2217-703	N
		2,4-D Amine	Setre (Helena)	5905-72	N
		Barrage LV Ester	Setre (Helena)	5905-504	N
		2,4-D LV4	Setre (Helena)	5905-90	N
		2,4-D LV6	Setre (Helena)	5905-93	N
		Clean Crop Amine 4	UAP-Platte Chem. Co.	34704-5 CA	Y
		Clean Crop Low Vol 6 Ester	UAP-Platte Chem. Co.	34704-125	N
		Salvo LV Ester	UAP-Platte Chem. Co.	34704-609	N
		2,4-D 4# Amine Weed Killer	UAP-Platte Chem. Co.	34704-120	N
		Clean Crop LV-4 ES	UAP-Platte Chem. Co.	34704-124	N
		Savage DS	UAP-Platte Chem. Co.	34704-606	Y
		Cornbelt 4 lb. Amine	Van Diest Supply Co.	11773-2	N
		Cornbelt 4# LoVol Ester	Van Diest Supply Co.	11773-3	N
		Cornbelt 6# LoVol Ester	Van Diest Supply Co.	11773-4	N
		Amine 4	Wilbur-Ellis Co.	2935-512	N
		Lo Vol-4	Wilbur-Ellis Co.	228-139-2935	N
		Lo Vol-6 Ester	Wilbur-Ellis Co.	228-95-2935	N
		Base Camp Amine 4	Wilbur-Ellis Co.	71368-1-2935	N
		Broadrange 55	Wilbur-Ellis Co.	2217-813-2935	N
		Agrisolution 2,4-D LV6	Winflied Solutions, LLC	1381-101	N
		Agrisolution 2,4-D Amine 4	Winfield Solutions, LLC	1381-103	N
		Agrisolution 2,4-D LV4	Winfield Solutions, LLC	1381-102	N
Dicamba	AK, AZ, CA, CO, ID, MT, ND,	Dicamba DMA	Albaugh, Inc./Agri Star	42750-40	N
	NE, NM, NV, OK, OR, SD, TX,	Vision	Albaugh, Inc.	42750-98	N
	UT, WA, WY	Cruise Control	Alligare, LLC	42750-40-81927	N
		Banvel	Arysta LifeScience N.A. Corp.	66330-276	Y
		Clarity	BASF Corporation	7969-137	Y

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Dicamba - cont.	AK, AZ, CA, CO, ID, MT, ND,	Vision	Helena Chemical Company	5905-576	Y
	NE, NM, NV, OK, OR, SD, TX,	Rifle	Loveland Products Inc.	34704-861	Y
	UT, WA, WY	Banvel	Micro Flo Company	51036-289	Y
		Diablo	Nufarm Americas Inc.	228-379	Y
		Vanquish Herbicide	Nufarm Americas Inc.	228-397	Y
		Vanquish	Syngenta	100-884	N
		Sterling Blue	Winfield Solutions, LLC	7969-137-1381	Y
Dicamba +	AK, AZ, CA, CO, ID, MT, ND,	Range Star	Albaugh, Inc./Agri Star	42750-55	N
2,4-D	NE, NM, NV, OK, OR, SD, TX,	Weedmaster	BASF Ag. Products	7969-133	Y
	UT, WA, WY	Brush-Rhap	Helena Chemical Company	5905-568	N
		Latigo	Helena Chemical Company	5905-564	N
		Outlaw	Helena Chemical Company	5905-574	N
		Rifle-D	Loveland Products Inc.	34704-869	N
		KambaMaster	Nufarm Americas Inc.	71368-34	N
		Veteran 720	Nufarm Americas Inc.	228-295	Y
		Weedmaster	Nufarm Americas Inc.	71368-34	N
		Brash	Winfield Solutions, LLC	1381-202	N
Dicamba +	AZ, CO, ID, MT, ND, NE, NM,	Distinct	BASF Corporation	7969-150	N
Diflufenzopyr	NV, OK, SD, TX, UT, WA, WY	Overdrive	BASF Corporation	7969-150	N
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of this herbicide is prohibited.					
Diquat	AK, AZ, CA, CO, ID, MT, ND,	Alligare Diquat	Alligare, LLC	81927-35	Y
	NE, NM, NV, OK, SD, TX, UT,	NuFarm Diquat SPC 2 L Herbicide	Nufarm Americas Inc.	228-675	N
	WA, WY	Diquat SPC 2 L Herbicide	Nufarm Americas Inc.	79676-75	Y
		Diquat E-Ag 2L	Nufarm Americas Inc.	79676-75	Y
		Reward	Syngena Professional Products	100-1091	Y

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Diuron	AK, AZ, CA, CO, ID, MT, ND,	Diuron 80DF	Agriliance, L.L.C.	9779-318	N
	NE, NM, NV, OK, SD, TX, UT,	Diuron 80DF	Alligare, LLC	81927-12	Y
	WA, WY	Karmex DF	DuPont Crop Protection	352-692	Y
		Karmex XP	DuPont Crop Protection	352-692	Y
		Karmex IWC	DuPont Crop Protection	352-692	Y
		Direx 4L	DuPont Crop Protection	352-678	Y
		Direx 80DF	Griffin Company	1812-362	Y
		Direx 4L	Griffin Company	1812-257	Y
		Diuron 4L	Loveland Products Inc.	34704-854	Y
		Diuron 80 WDG	Loveland Products Inc.	34704-648	N
		Diuron 4L	Makteshim Agan of N.A.	66222-54	N
		Diuron 80WDG	UAP-Platte Chem. Co.	34704-648	N
		Vegetation Man. Diuron 80 DF	Vegetation Man., LLC	66222-51-74477	N
		Diuron-DF	Wilbur-Ellis	00352-00-508-02935	N
		Diuron 80DF	Winfield Solutions, LLC	9779-318	N
Fluridone	AK, AZ, CA, CO, ID, MT, ND,	Avast!	SePRO	67690-30	Y
	NE, NM, NV, OK, SD, TX, UT,	Sonar AS	SePRO	67690-4	Y
	WA, WY	Sonar Precision Release	SePRO	67690-12	Y
		Sonar Q	SePRO	67690-3	Y
		Sonar SRP	SePRO	67690-3	Y
Glyphosate	AK, AZ, CA, CO, ID, MT, ND,	Aqua Star	Albaugh, Inc./Agri Star	42750-59	Y
	NE, NM, NV, OK, OR, SD, TX,	Forest Star	Albaugh, Inc./Agri Star	42570-61	Y
	UT, WA, WY	GlyStar Gold	Albaugh, Inc./Agri Star	42750-61	Y
		Gly Star Original	Albaugh, Inc./Agri Star	42750-60	Y
		Gly Star Plus	Albaugh, Inc./Agri Star	42750-61	Y
		Gly Star Pro	Albaugh, Inc./Agri Star	42750-61	Y
		Glyphosate 4 PLUS	Alligare, LLC	81927-9	Y
		Glyphosate 5.4	Alligare, LLC	81927-8	Y
		Glyfos	Cheminova	4787-31	Y
		Glyfos PRO	Cheminova	67760-57	Y
		Glyfos Aquatic	Cheminova	4787-34	Y

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Glyphosate - cont.	AK, AZ, CA, CO, ID, MT, ND,	ClearOut 41 Plus	Chem. Prod. Tech., LLC	70829-3	N
	NE, NM, NV, OK, OR, SD, TX,	Accord Concentrate	Dow AgroSciences	62719-324	Y
	UT, WA, WY	Accord SP	Dow AgroSciences	62719-322	Y
		Accord XRT	Dow AgroSciences	62719-517	Y
		Accord XRT II	Dow AgroSciences	62719-556	Y
		Glypro	Dow AgroSciences	62719-324	Y
		Glypro Plus	Dow AgroSciences	62719-322	Y
		Rodeo	Dow AgroSciences	62719-324	Y
		Showdown	Helena Chemical Company	71368-25-5905	Y
		Mirage	Loveland Products Inc.	34704-889	Y
		Mirage Plus	Loveland Products Inc.	34704-890	Y
		Aquamaster	Monsanto	524-343	Y
		Roundup Original	Monsanto	524-445	Y
		Roundup Original II	Monsanto	524-454	Y
		Roundup Original II CA	Monsanto	524-475	Y
		Honcho	Monsanto	524-445	Y
		Honcho Plus	Monsanto	524-454	Y
		Roundup PRO	Monsanto	524-475	Y
		Roundup PRO Concentrate	Monsanto	524-529	Y
		Roundup PRO Dry	Monsanto	524-505	Y
		Roundup PROMAX	Monsanto	524-579	Y
		Aqua Neat	Nufarm Americas Inc.	228-365	Y
		Credit Xtreme	Nufarm Americas Inc.	71368-81	Y
		Foresters	Nufarm Americas Inc.	228-381	Y
		Razor	Nufarm Americas Inc.	228-366	Y
		Razor Pro	Nufarm Americas Inc.	228-366	Y
		GlyphoMate 41	PBI/Gordon Corporation	2217-847	Y
		AquaPro Aquatic Herbicide	SePRO Corporation	62719-324-67690	Y
		Rattler	Setre (Helena)	524-445-5905	Y
		Buccaneer	Tenkoz	55467-10	Y
		Buccaneer Plus	Tenkoz	55467-9	Y
		Mirage Herbicide	UAP-Platte Chem. Co.	524-445-34704	Y
		Mirage Plus Herbicide	UAP-Platte Chem. Co.	524-454-34704	Y

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Glyphosate - cont.	AK, AZ, CA, CO, ID, MT, ND,	Gly-4 Plus	Universal Crop Protection Alliance, LLC	72693-1	Y
	NE, NM, NV, OK, OR, SD, TX,	Gly-4 Plus	Universal Crop Protection Alliance, LLC	42750-61-72693	Y
	UT, WA, WY	Gly-4	Universal Crop Protection Alliance, LLC	42750-60-72693	Y
		Glyphosate 4	Vegetation Man., LLC	73220-6-74477	Y
		Agrisolutions Cornerstone	Winfield Solutions, LLC	1381-191	Y
		Agrisolutions Cornerstone Plus	Winfield Solutions, LLC	1381-192	Y
		Agrisolutions Rascal	Winfield Solutions, LLC	1381-191	N
		Agrisolutions Rascal Plus	Winfield Solutions, LLC	1381-192	N
Glyphosate +	AK, AZ, CA, CO, ID, MT, ND,	Landmaster BW	Albaugh, Inc./Agri Star	42570-62	N
2,4-D	NE, NM, NV, OK, OR, SD, TX,	Campaign	Monsanto	524-351	N
	UT, WA, WY	Landmaster BW	Monsanto	524-351	N
Hexazinone	AK, AZ, CA, CO, ID, MT, ND,	Velpar ULW	DuPont Crop Protection	352-450	N
	NE, NM, NV, OK, SD, TX, UT,	Velpar L	DuPont Crop Protection	352-392	Y
	WA, WY	Velpar DF	DuPont Crop Protection	352-581	Y
		Velossa	Helena Chemical Company	5905-579	Y
		Pronone MG	Pro-Serve	33560-21	N
		Pronone 10G	Pro-Serve	33560-21	Y
		Pronone 25G	Pro-Serve	33560-45	N
Hexazinone +	AK, AZ, CO, ID, MT, ND, NE,	Westar	DuPont Crop Protection	352-626	Y
Sulfometuron methyl	NM, NV, OK, SD, TX, UT, WA,	Oustar	DuPont Crop Protection	352-603	Y
	WY				
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of these herbicides is prohibited.					
Imazapic	AZ, CO, ID, MT,ND, NE, NM,	Panoramic 2SL	Alligare, LLC	66222-141-81927	N
	NV, OK, SD, TX, UT, WA, WY	Plateau	BASF	241-365	N
Imazapic +	AZ, CO, ID, MT,ND, NE, NM,	Journey	BASF	241-417	N
Glyphosate	NV, OK, SD, TX, UT, WA, WY				

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Imazapyr	AK, AZ, CA, CO, ID, MT, ND,	Imazapyr 2SL	Alligare, LLC	81927-23	N
	NE, NM, NV, OK, SD, TX, UT,	Imazapyr 4SL	Alligare, LLC	81927-24	N
	WA, WY	Ecomazapyr 2SL	Alligare, LLC	81927-22	N
		Arsenal Railroad Herbicide	BASF	241-273	N
		Chopper	BASF	241-296	Y
		Arsenal Applicators Conc.	BASF	241-299	N
		Arsenal	BASF	241-346	N
		Arsenal PowerLine	BASF	241-431	N
		Stalker	BASF	241-398	N
		Habitat	BASF	241-426	Y
		Polaris	Nufarm Americas Inc.	228-534	Y
		Polaris AC	Nufarm Americas Inc.	241-299-228	Y
		Polaris AC	Nufarm Americas Inc.	228-480	Y
		Polaris AQ	Nufarm Americas Inc.	241-426-228	Y
		Polaris RR	Nufarm Americas Inc.	241-273-228	N
		Polaris SP	Nufarm Americas Inc.	228-536	Y
		Polaris SP	Nufarm Americas Inc.	241-296-228	Y
		Polaris Herbicide	Nufarm Americas Inc.	241-346-228	N
		Habitat Herbicide	SePRO	241-426-67690	Y
		SSI Maxim Arsenal 0.5G	SSI Maxim Co., Inc.	34913-23	N
		Ecomazapyr 2 SL	Vegetation Man., LLC	74477-6	N
		Imazapyr 2 SL	Vegetation Man., LLC	74477-4	N
		Imazapyr 4 SL	Vegetation Man., LLC	74477-5	N
Imazapyr +	AK, AZ, CA, CO, ID, MT, ND,	Mojave 70 EG	Alligare, LLC	74477-9-81927	N
Diuron	NE, NM, NV, OK, SD, TX, UT,	Sahara DG	BASF	241-372	N
	WA, WY	Imazuron E-Pro	Etigra, LLC	79676-54	N
		SSI Maxim Topsite 2.5G	SSI Maxim Co., Inc.	34913-22	N
Imazapyr +	AK, AZ, CA, CO, ID, MT, ND,	Lineage Clearstand	DuPont Crop Protection	352-766	N
Metsulfuron methyl	NE, NM, NV, OK, SD, TX, UT,				
	WA, WY				

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Imazapyr +	AK, AZ, CA, CO, ID, MT, ND,	Lineage HWC	DuPont Crop Protection	352-765	N
Sulfometuron methyl +	NE, NM, NV, OK, SD, TX, UT,	Lineage Prep	DuPont Crop Protection	352-767	N
Metsulfuron methyl	WA, WY				
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of these herbicides is prohibited.					
Metsulfuron methyl	AK, AZ, CO, ID, MT, ND, NE,	MSM 60	Alligare, LLC	81927-7	N
	NM, NV, OK, SD, TX, UT, WA,	AmTide MSM 60DF Herbicide	AmTide, LLC	83851-3	N
	WY	Escort DF	DuPont Crop Protection	352-439	N
		Escort XP	DuPont Crop Protection	352-439	N
		MSM E-Pro 60 EG Herbicide	Etigra, LLC	81959-14	N
		MSM E-AG 60 EG Herbicide	Etigra, LLC	81959-14	N
		Patriot	Nufarm Americas Inc.	228-391	N
		PureStand	Nufarm Americas Inc.	71368-38	N
		Metsulfuron Methyl DF	Vegetation Man., L.L.C.	74477-2	N
Metsulfuron methyl +	AK, AZ, CO, ID, MT, ND, NE,	Cimarron Extra	DuPont Crop Protection	352-669	N
Chlorsulfuron	NM, NV, OK, SD, TX, UT, WA,	Cimarron Plus	DuPont Crop Protection	352-670	N
	WY				
Metsulfuron methyl +	AK, AZ, CO, ID, MT, ND,	Cimarron MAX	DuPont Crop Protection	352-615	N
Dicamba + 2,4-D	NE, NM, NV, OK, SD, TX,				
	UT, WA, WY				
Picloram	AZ, CO, ID, MT, ND, NE, NM,	Triumph K	Albaugh, Inc.	42750-81	N
	NV, OK, OR, SD, TX, UT, WA,	Triumph 22K	Albaugh, Inc.	42750-79	N
	WY	Picloram K	Alligare, LLC	42750-81-81927	N
		Picloram K	Alligare, LLC	81927-17	N
		Picloram 22K	Alligare, LLC	42750-79-81927	N
		Picloram 22K	Alligare, LLC	81927-18	N
		Grazon PC	Dow AgroSciences	62719-181	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Picloram - cont.	AZ, CO, ID, MT, ND, NE, NM,	OutPost 22K	Dow AgroSciences	62719-6	N
	NV, OK, OR, SD, TX, UT, WA,	Tordon K	Dow AgroSciences	62719-17	N
	WY	Tordon 22K	Dow AgroSciences	62719-6	N
		Trooper 22K	Nufarm Americas Inc.	228-535	N
Picloram +	AZ, CO, ID, MT, ND, NE, NM,	GunSlinger	Albaugh, Inc.	42750-80	N
2,4-D	NV, OK, OR, SD, TX, UT, WA,	Picloram + D	Alligare, LLC	42750-80-81927	N
	WY	Picloram + D	Alligare, LLC	81927-16	N
		Tordon 101M	Dow AgroSciences	62719-5	N
		Tordon 101 R Forestry	Dow AgroSciences	62719-31	N
		Tordon RTU	Dow AgroSciences	62719-31	N
		Grazon P+D	Dow AgroSciences	62719-182	N
		HiredHand P+D	Dow AgroSciences	62719-182	N
		Pathway	Dow AgroSciences	62719-31	N
		Trooper 101	Nufarm Americas Inc.	228-561	N
		Trooper P + D	Nufarm Americas Inc.	228-530	N
Picloram +	AZ, CO, ID, MT, ND, NE, NM,	Trooper Extra	Nufarm Americas Inc.	228-586	N
2,4-D +	NV, OK, OR, SD, TX, UT, WA,				
Dicamba	WY				
Sulfometuron methyl	AK, AZ, CA, CO, ID, MT, ND,	SFM 75	Alligare, LLC	81927-26	Y
	NE, NM, NV, OK, SD, TX, UT	Oust DF	DuPont Crop Protection	352-401	N
	WA, WY	Oust XP	DuPont Crop Protection	352-601	Y
		SFM E-Pro 75EG	Etigra, LLC	79676-16	Y
		Spyder	Nufarm Americas Inc.	228-408	Y
		SFM 75	Vegetation Man., L.L.C.	72167-11-74477	Y

NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of these herbicides is prohibited.

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Sulfometuron methyl +	AK, AZ, CA, CO, ID, MT, ND,	Landmark XP	DuPont Crop Protection	352-645	Y
Chlorsulfuron	NE, NM, NV, OK, SD, TX, UT				
	WA, WY				
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of this herbicide is prohibited.					
Sulfometuron methyl +	AK, AZ, CA, CO, ID, MT, ND,	Oust Extra	DuPont Crop Protection	352-622	N
Metsulfuron methyl	NE, NM, NV, OK, SD, TX, UT				
	WA, WY				
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of this herbicide is prohibited.					
Tebuthiuron	AZ, CA, CO, ID, MT, ND, NE,	Alligare Tebuthiuron 80 WG	Alligare, LLC	81927-37	Y
	NM, NV, OK, SD, TX, UT, WA,	Alligare Tebuthiuron 20 P	Alligare, LLC	81927-41	Y
	WY	Spike 20P	Dow AgroSciences	62719-121	Y
		Spike 80DF	Dow AgroSciences	62719-107	Y
		SpraKil S-5 Granules	SSI Maxim Co., Inc.	34913-10	Y
Tebuthiuron +	AZ, CA, CO, ID, MT, ND, NE,	SpraKil SK-13 Granular	SSI Maxim Co., Inc.	34913-15	Y
Diuron	NM, NV, OK, SD, TX, UT, WA,	SpraKil SK-26 Granular	SSI Maxim Co., Inc.	34913-16	Y
	WY				
Triclopyr	AK, AZ, CA, CO, ID, MT, ND,	Triclopyr 4EC	Alligare, LLC	72167-53-74477	Y
	NE, NM, NV, OK, SD, TX, UT	Triclopyr 3	Alligare, LLC	81927-13	Y
	WA, WY	Triclopry 4	Alligare, LLC	81927-11	Y
		Element 3A	Dow AgroSciences	62719-37	Y
		Element 4	Dow AgroSciences	62719-40	Y
		Forestry Garlon XRT	Dow AgroSciences	62719-553	Y
		Garlon 3A	Dow AgroSciences	62719-37	Y
		Garlon 4	Dow AgroSciences	62719-40	Y
		Garlon 4 Ultra	Dow AgroSciences	62719-527	Y

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Triclopyr - cont.	AK, AZ, CA, CO, ID, MT, ND,	Remedy	Dow AgroSciences	62719-70	Y
	NE, NM, NV, OK, SD, TX, UT	Remedy Ultra	Dow AgroSciences	62719-552	Y
	WA, WY	Pathfinder II	Dow AgroSciences	62719-176	Y
		Trycera	Helena Chemical Company	5905-580	Y
		Relegate	Nufarm Americas Inc.	228-521	Y
		Relegate RTU	Nufarm Americas Inc.	228-522	Y
		Tahoe 3A	Nufarm Americas Inc.	228-384	Y
		Tahoe 3A	Nufarm Americas Inc.	228-518	Y
		Tahoe 3A	Nufarm Americas Inc.	228-520	Y
		Tahoe 4E	Nufarm Americas Inc.	228-385	Y
		Tahoe 4E Herbicide	Nufarm Americas Inc.	228-517	Y
		Renovate 3	SePRO Corporation	62719-37-67690	Y
		Renovate OTF	SePRO Corporation	67690-42	Y
		Ecotriclopyr 3 SL	Vegetation Man., LLC	72167-49-74477	N
		Triclopyr 3 SL	Vegetation Man., LLC	72167-53-74477	N
Triclopyr +	AK, AZ, CA, CO, ID, MT, ND,	Everett	Alligare, LLC	81927-29	Y
2,4-D	NE, NM, NV, OK, SD, TX, UT,	Crossbow	Dow AgroSciences	62719-260	Y
	WA, WY	Candor	Nufarm Americas Inc.	228-565	Y
		Aquasweep	Nufarm Americas Inc.	228-316	N
Triclopyr +	AK, AZ, CA, CO, ID, MT, ND,	Prescott Herbicide	Alligare, LLC	81927-30	Y
Clopyralid	NE, NM, NV, OK, SD, TX, UT,	Redeem R&P	Dow AgroSciences	62719-337	Y
	WA, WY	Brazen	Nufarm Americas Inc.	228-564	Y

*** Refer to the complete label prior to considering the use of any herbicide formulation. Label changes can impact the intended use through, such things as, creation or elimination of Special Local Need (SLN) or 24 (c) registrations, changes in application sites, rates and timing of application, county restrictions, etc.**

**** Just because a herbicide has a Federal registration, and is approved under the current EIS, it may or may not be registered for use in California. This column identifies those formulations for which there is a California registration.**

This page intended to be blank.

APPENDIX C

Pesticide Use Proposal and Pesticide Application Report Forms

This page intended to be blank.

PUP No. 09-LLUTG01000-____

U.S. DEPARTMENT OF INTERIOR
PESTICIDE USE PROPOSAL
EA NUMBER: UT-08-73 / REV. 03/25/85

NEPA REFERNCE NUMBERS: FERC/EIS -0144, CSLC ERI No. 710, BLM CACA-43346, BLM CACA-17918

STATE / FIELD OFFICE: Utah / Vernal Field Office

DATE SUBMITTED: _____

DURATION OF PROPOSAL: Usually three full years from approval date.

COUNTY (check): ☐ Daggett ☐ Duchesne ☐ Grand ☐ Uintah

LOCATION(S) (include attachments and maps): _____
_____
_____

TREATMENT SITE—including land type, land use, slope, soil type:
_____
_____

ESTIMATED ACRES: _____

SENSITIVE ASPECTS AND PRECAUTIONS—including distance from treatment site to wetlands or other sensitive areas; distance to TES species or their habitat; and measures taken intended to avoid impact:
_____
_____

MAJOR NON-TARGET PLANT SPECIES PRESENT: _____
_____

PESTICIDE APPLICATION TABLES. *Please use the following tables to indicate which products will be used. The row number should be consistent throughout Tables 1, 2, 3 & 4 (i.e., row 1 in Table 1 should correspond to row 1 in Tables 2, 3 & 4, etc). Cut and paste more rows to each table if needed for additional products. Use Table 5 for adjuvants (i.e., colorants, diluents, surfactants, etc). Yellow-highlighted examples ("Exp") are given in each table.*

It is no longer necessary to submit the product label; but in Table 2, please indicate the product label page number where application rates are specified—as shown in the examples. Use the most current product label as posted on the manufacturer's webpage.

Do not fill in the last column in Table 3. It is for office use only, for us to compare your intended application rate against the most current Weed EIS rate.

You may submit this PUP electronically or print it, fill it out by hand and mail it in—but if your handwriting is illegible, this PUP will be returned without action.

1. PESTICIDES. Row numbers in Table 1 should correspond to same row numbers in Tables 2, 3 & 4.

Row No.	TRADE NAME	COMMON NAME	EPA REG. No.	MANUFACTURER	FORMULATION (liquid or granule)	APPLICATION METHOD
Exp	Escort XP	metsulfuron methyl	352-439	DuPont	dry granular	Pickup or ATV unit
Exp	Round-Up Pro	glyphosate	524-475	Monsanto	liquid	backpack spray
1						
2						
3						
4						

2. APPLICATION RATE ACCORDING TO PRODUCT LABEL. Indicate product label page number where application rate is given, as shown in examples. Rows correspond to rows in Table 1.

Row No.	TRADE NAME	MAXIMUM ALLOWABLE APPLICATION RATE ON PRODUCT LABEL	RATE PER ACRE RECOMMENDED ON PRODUCT LABEL	for liquid formulations only: POUNDS ACID EQUIVALENT (AE) PER ACRE
Exp	Escort XP	(pg.3) 4 oz / acre	(pg. 5) 0.5 - 2.0 oz / acre	NA
Exp	Round-Up Pro	(pg.2) 10.6 qts / acre	(pg. 8) 1 - 2 qts / acre	0.75 - 1.5 Lbs AE / acre
1				
2				
3				
4				

3. INTENDED APPLICATION RATE. Rows correspond to rows in Table 1.

Row No.	TRADE NAME	INTENDED APPLICATION RATE	for dry formulations only: INTENDED POUNDS ACTIVE INGREDIENT / ACRE	for liquid formulation only: INTENDED POUNDS ACID EQUIVALENT / ACRE	*for office use only:* VEIS RATE / ACRE (AE, AI, or formulated product)
Exp	Escort XP	1 oz / acre	0.6 oz AI / acre	NA	0.15 Lbs AI / acre
Exp	Round-Up Pro	1 – 2 qts / acre	NA	0.75 – 1.5 Lbs AE / acre	7.0 Lbs AE / acre
1					
2					
3					
4					

4. PESTICIDE TIMING & TARGET. Rows correspond to rows in Table 1.

Row No.	TRADE NAME	TREATMENT DATE	NUMBER OF TREATMENTS	TARGET WEED
Exp	Escort XP	15 Apr - 30 Oct	1-2 per year, as needed	all
Exp	Round-Up Pro	15 Apr - 30 Oct	1-2 per year, as needed	all
1				
2				
3				
4				

5. ADJUVANTS (COLORANTS, DILUENTS, MARKERS, SURFACTANTS, ETC)

TRADE NAME		ADJUVANT TYPE	MANUFACTURER	APPLICATION RATE ON PRODUCT LABEL	INTENDED APPLICATION RATE	FOR USE WITH WHICH HERBICIDES?
Exp	Hi-Light	colorant	Becker Underwood	16 oz / 100 Gal solution	16 oz / 100 Gal	Escort XP, Roundup Pro

The following must be filled out legibly and signed. If your handwriting is in any way illegible, this PUP will be returned to the sender without action.

"Originator" refers to the company which needs herbicides applied—e.g., Basin Oil, Inc.
"Applicator" refers to the company which will apply the herbicide—e.g., Basin Annihilo-Weed, Inc.

Use the back page for additional applicators, if needed.

Originator company: _____

Originator contact name: _____

Originator contact phone number(s): _____

Originator mailing address: _____

Applicator company name: _____

Applicator printed name: _____

Applicator license no.: _____

Applicator e-mail address: _____

Applicator phone & fax numbers: _____

Applicator mailing address: _____

I will ensure that the pesticide(s) and pesticide products will be applied in accordance with product label restrictions, and according to the information presented above, and according to BLM modifications (if any). I will also ensure that a Pesticide Use Application Record will be submitted to the BLM Vernal Field Office by December of each year for the duration of this PUP.

Applicator or Originator signature: _____ **Date:** _____

Printed / typed name: _____

To be signed and approved by BLM personnel:

FO Pesticide Coördinator signature: _____ **Date:** _____

FO Manager approval: _____ **Date:** _____

State Coördinator signature: _____ **Date:** _____

Deputy State Director approval: _____ **Date:** _____

___ **APPROVED**
___ **DISAPPROVED**
___ **APPROVED WITH MODIFICATIONS (see below):**

Modifications (*office use only*):

_____

_____

_____

_____

_____

_____

List additional applicators here. Cut and paste for still more applicators if needed.

Applicator company name: _____

Applicator printed name: _____

Applicator license no.: _____

Applicator e-mail address: _____

Applicator phone & fax numbers: _____

Applicator mailing address: _____

Applicator company name: _____

Applicator printed name: _____

Applicator license no.: _____

Applicator e-mail address: _____

Applicator phone & fax numbers: _____

Applicator mailing address: _____

Applicator company name: _____

Applicator printed name: _____

Applicator license no.: _____

Applicator e-mail address: _____

Applicator phone & fax numbers: _____

Applicator mailing address: _____

Applicator company name: _____

Applicator printed name: _____

Applicator license no.: _____

Applicator e-mail address: _____

Applicator phone & fax numbers: _____

Applicator mailing address: _____

PESTICIDE (WEED) APPLICATION RECORD FORM
BLM-Vernal, 170 South 500 East Phone (435) 781-4400

ed Management Area:	Site Name:
Vegetation/Community Type:	Weed Site # Quad #
Complex %	Applicator:
Watershed	Address:
Allotment:	License No.: Phone #
Quad Name(s):	County:
Location T. , R. , Sec. , ¼ ¼	Aerial Photo #
GPS Reading	Slide Photo

WEED SPECIES	Phenology	Cover Class	Pattern	Infest. Size	ECOLOGICAL SITE DESCRIPTION	APPLICATION DATA
					Name:	Rate/Ac. Volume:
					Condition:	Active/Acre:
					Soil Map Unit #	Total Volume:
					WEATHER	Acres treated:
					Wind speed:	Acres on site:
					Direction:	**MECHANICAL TREATMENT (circle one)**
					Temperature:	Hand pull, hand tool, clip seed heads
					PEST TREATMENT (circle one)	Plow, other
					crop, seeded, native, roadside, agriculture, reservoir bank, oil well, other	**BIOLOGICAL TREATMENT**
						Bio Agent:
					WEED TREATMENT DATA	Method applied:
					Date:	**Monitoring**
Recovery Species					Time:	Original treatment
					EQUIPMENT TYPE (circle one)	Original Acres
					Power Boom, Power hand	Follow-up
					Backpack, ATV	Photo point
					Aerial	Photo #
					TREATMENT METHOD (circle one)	**Veg Study**
					Pesticide, Mechanical, Biological	Frequency, Cover, Step point
					Trade Name:	**Site Recovery Needs**
Width Track:					Active Ingredient:	Grazing deferment yn
Weed Ac. Est.					Company Name:	Vegetative seed yn
Ac. Inventoried:					EPA Reg. No.:	Method seed
Site Characteristics					PUP No.:	Hand broadcast, Spreader ATV, Drill, Disc, Other
					FORMULATION (circle one)	
Elevation:					Liquid, Powder, Granular	Acres Rehabilitated:
Aspect (direction):						Species seeded:
Slope (%):						Date:
TOPOGRAPHY (circle one)						Species established:
Ridge, Upper Slope						Date:
Midslope, Lower slope						
Bench/Flat, Stream Bottom						
Meadow						

Comments

COVER CLASS - estimated percent cover, by species, of the infestation

0	No weeds found
1	Less than 1% (trace)
2	One to five percent (low - occasional plants)
3	Six to twenty-five percent (moderate - scattered plants)
4	Twenty-five to 100% (high - fairly dense)

PATTERN - pattern of the infestation

0	No weeds found
1	Single plant or small area of many plants
2	Linear
3	Patchy
4	Block

INFESTATION SIZE - number of estimated acres of the infestation

0	No weeds found
1	Less than one acre
2	One to five acres
3	Five or more acres

PHENOLOGY - development stage

1	Vegetative
2	Bud stage
3	Flower
4	Seeded
5	Mature
6	Dormant

Appendix D

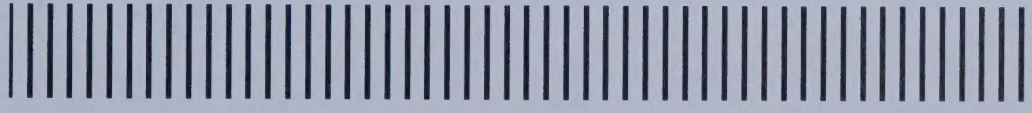
Stormwater Pollution Prevention Plan

This document to be provided prior to any earth disturbance under EPA NPDES Regulations.

This page intended to be blank.

Appendix E

Spill Prevention, Control and Countermeasure Plan



This page intended to be blank.

K Road Moapa Solar Generation Facility Spill Prevention Control and Countermeasures (SPCC) Plan

February 2012

Report Prepared By:

ARCADIS-US, Inc.

100 Congress Avenue
Suite 1485
Austin, Texas 78701
512-370-3868

6923001

This page intended to be blank.

Contents

1. Introduction 1-1

1.1. General Applicability 1-2

2. Approval and Certification 2-1

3. Owner/ Operator Certification 3-1

4. Plan Maintenance [§112.3, §112.5 and §112.7] 4-1

4.1. Requirement to Prepare: [§112.3] 4-1
4.2. Plan Review and Amendments: [§112.5] 4-1
4.2.1. Changes in Facility Configuration: [§112.5(a)] 4-1
4.2.1.1. Non-Technical Amendments 4-2
4.2.2. Schedule Plan Reviews [§112.5(b)] 4-2
4.3. General Requirements: [§112.7] 4-3
4.4. Fully Operational Equipment: [§112.7] 4-3
4.5. Deviations and Equivalent Environmental Protection: [§112.7(a)(2)] 4-4
4.5.1. Deviations for Integrity Testing 4-4
4.5.2. Deviations from Liquid Level Sensing Devices 4-4

5. Facility Description General [§112.7(a)(3)] 5-1

5.1. General Facility Information 5-1
5.2. General Facility Description 5-1
5.3. Oil Storage 5-3
5.4. Discharge Prevention and Routine Handling Procedures 5-4

6. Release Response [§112.7(a)(3-5)] 6-1

6.1. Release Response Procedures 6-1
6.2. Recovered Materials Disposal 6-2
6.3. Incidental Releases 6-3

7. Release Notification [§112.7(a)(4)] 7-1

7.1. Verbal Notifications to Government Agencies 7-1
7.1.1. Verbal Notifications to Local Agencies 7-1
7.1.2. Verbal Notifications to State Agencies 7-1
7.1.3. Verbal Notifications to Federal Agencies 7-1
7.2. Information to Provide During Verbal Notifications 7-2
7.3. Written Notifications to Government Agencies 7-3
7.4. Written Notifications to Local Agencies 7-3
7.5. Written Notifications to State Agencies 7-3
7.6. Written Notifications to Federal Agencies 7-3
7.6.1. Incident Termination 7-4

8. Evaluation of Discharge Potential [§112.7(b),(c) & (d)] 8-1

8.1. Potential Discharge Volumes 8-1
8.2. Direction of Flow [§112.7(b)] 8-1
8.2.1. Off-Site 8-1
8.2.2. On-Site 8-1
8.3. Discharge Containment [§112.7(c)] 8-2
8.3.1. Containment and Diversionary Structures 8-2
8.3.2. Spill Response Equipment 8-2
8.4. Practicability of Secondary Containment [§112.7(d)] 8-3
8.5. Alternative Requirements to General Secondary Containment for Qualified Oil-Filled Equipment [§112.7(d)] 8-3

9. Inspection, Tests, and Records [§112.7(e)] 9-1

9.1. Daily Inspections 9-1
9.2. Monthly Inspections 9-1
9.3. Annual Inspections 9-2
9.3.1. Certified Inspections 9-2
9.4. Recordkeeping 9-3

10. Employee Training [§112.7(f)] 10-1

10.1. SAFETY MEETINGS 10-2

11. Security [§112.7(g)] 11-1

11.1. Fencing 11-1
11.2. Valves 11-1
11.3. Pipeline Connections 11-1
11.4. Lighting 11-1

12. Loading and Unloading Racks [§112.7(h)] 12-1

13. Brittle Fracture Evaluation [§112.7(i)] 13-1

14. Conformance with Regulations [§112.7(j)] 14-1

15. Facility Drainage [§112.8(b)] 15-1

16. Bulk Storage Containers [§112.8(c)] 16-1

16.1. Material of Construction [§112.8(c)(1)] 16-1
16.2. Secondary Containment [§112.8(c)(2)] 16-1
16.3. Rainwater Discharge from Diked Areas [§112.8(c)(3)] 16-1
16.4. Completely Buried Metallic Storage Tanks [§112.8(c)(4)] 16-1
16.5. Partially Buried Metallic Storage Tanks [§112.8(c)(5)] 16-1
16.6. Integrity Testing [§112.8(c)(6)] 16-2
16.6.1. Integrity Testing Guidelines 16-2

16.6.2. Integrity Testing Exclusions 16-2
16.6.3. Environmental Equivalence 16-2
16.6.4. Integrity Testing Schedule 16-3
16.7. Heating Coils [§112.8(c)(7)] 16-4
16.8. Discharge Warning Devices [§112.8(c)(8)] 16-4
16.9. Effluent Treatment Facilities [§112.8(c)(9)] 16-4
16.10. Visible Discharge [§112.8(c)(10)] 16-4

17. Portable Oil Storage Containers [§112.8(c)(11)] 17-1

18. Facility Transfer Operations [§112.8(d)] 18-1

List of Tables

Table 4-1: Bulk Storage Containers and Equipment 4-3
Table 5-1: Spill Containment and Cleanup Equipment 5-4

List of Figures

Figure 1 Site Location Map
Figure 2 Site Plan

Appendices

A. Regulatory Requirement Cross-Reference Table
B. Certification of Substantial Harm Determination
C. SPCC Plan Review Log
D. Petroleum Storage Tanks, Containers, and Oil-Filled Equipment Inventory
E. Spill Reporting Matrix, Contact List and Spill Log
F. Inspection Form and Checklist
G. Tank Filing Procedures

Acronyms Used in the Report

AST	Above-ground Storage Tank
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
FRP	Facility Response Plan
K Road	K Road Power
kV	Kilovolt
LPEC	Local Environmental Planning Committee
MW	Megawatt
NDEP	Nevada Department of Environmental Protection
NRC	National Response Center
O&M	Operations and Maintenance
PPE	Personal Protective Equipment
PV	Photovoltaic
Reservation	Moapa River Reservation
SPCC	Spill Prevention and Control and Countermeasures
STI	Steel Tank Institute
Tribe	Moapa Band of Paiute Indians

1. Introduction

The objective of this Spill Prevention, Control, and Countermeasure (SPCC) Plan, prepared in accordance with 40 Code of Federal Regulations (CFR), Part 112, Oil Pollution Prevention, is to describe the procedures followed by K Road Power (K Road) to prevent, control, and mitigate releases of oil and petroleum products to navigable waters at its facility located on the Moapa Band of Paiute Indians (Tribe) Moapa River Reservation (Reservation). Navigable waters are waters of the U.S., as defined by the Clean Water Act, and include, but are not limited to, rivers, streams, ephemeral washes, and wetlands. This SPCC Plan is required because greater than 1,320 gallons of oil and petroleum products are stored above ground at the K Road facility.

The Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, authorized the establishment of procedures, methods, equipment, and other requirements for the prevention and/or containment of discharges of oil and hazardous substances from vessels and onshore and offshore facilities. In partial response to this authorization, the U.S. Environmental Protection Agency (EPA) issued Oil Pollution Prevention regulations for Non-Transportation Related Onshore and Offshore Facilities on December 11, 1973 (effective January 10, 1974). These regulations were published under Title 40 CFR Part 112 and specifically outlined requirements for the preparation of SPCC plans.

On July 17, 2002, EPA published modifications to the SPCC requirements in the Federal Register (Volume 67, No. 137, pages 47041-47152). In December 2006, EPA signed a final rule amending the SPCC rule at 40 CFR 112 to address a number of issues raised by its 2002 final rule, including those pertaining to facilities with smaller oil storage capacities, qualified oil-filled operational equipment, motive power containers, and mobile refuelers. In addition, these revisions require that the owner or operator must combine visual inspections with another testing technique such as hydrostatic testing, radiographic testing, ultrasonic testing, acoustic testing, or other system of non-destructive shell testing. This Plan has been prepared in accordance with these revised regulations.

Appendix A provides a cross-reference table for the applicable requirements of 40 CFR Par 112. Appendix A provides the exact wording of the federal rule and the corresponding sections in this SPCC Plan where the requirements are addressed. The substantive requirements (§112.7 and §112.8) are addressed in the Plan, additional information and diagrams are included as appendices and figures attached to the Plan. The format of this Plan is intended to be an efficient presentation of pertinent information for use at the K Road Moapa Solar facility.

1.1. General Applicability

The Oil Pollution Prevention Regulations (40 CFR Part 112) require preparation of an SPCC Plan for facilities that have discharged, or could reasonably be expected to discharge, oil into or upon navigable waters of the United States or adjoining shorelines. Specifically, §112.1(d) (2) (ii) requires an SPCC Plan to be developed for a facility where the aggregate storage capacity of oil is greater than 1,320 gallons (including containers with thresholds of 55 gallons or greater) and which, due to its location, could reasonably be expected to discharge oil in quantities that may be harmful. Oil is defined as including petroleum, fuel oil, transformer oil, greases, synthetic oils, mineral oils, vegetable oil, oil refuse, sludge, and oil mixed with wastes other than dredged spoil. Storage capacity is the shell capacity of the container. Storage containers include, but are not limited to, aboveground tanks, underground tanks, tanks in equipment, oil in equipment, tote tanks, and 55-gallon drums.

All facilities regulated under 40 CFR Part 112 must conduct an initial screening to determine whether they "could cause substantial harm to the environment by discharging oil" and, consequently, could be required to develop a Facility Response Plan (FRP) under §112.20. The certified checklist demonstrating that these requirements are not applicable to the facility included in this Plan is included in Appendix B.

The purpose of this SPCC Plan is to identify sources of petroleum, oil, and lubricants stored in 55-gallon or greater containers, tanks, and oil-filled equipment, and to outline procedures to prevent the discharge of oil to navigable waters of the United States. The SPCC Plan also establishes the activities required to mitigate such discharges if they occur. Discharge of oil is specifically prohibited by law if it affects water quality; causes a film, sheen, or discoloration of the water surface or upon water or adjoining shorelines; or causes a sludge or emulsion to be deposited beneath the surface of the adjoining shorelines. Discharge includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping of oil, but excludes discharges in compliance with applicable federal, state, and local regulations.

2. Approval and Certification

K Road Moapa Solar LLC (K Road) is committed to the prevention of discharges of oil or oily wastewater to navigable waters and the environment. K Road maintains the highest standards for spill prevention through regular review, updating, and implementation of this SPCC Plan for the Moapa Solar facility. K Road hereby commits the required equipment, material, and human resources to expeditiously control and remove discharges of oil in harmful quantities.

Name: _____

Signature: _____

Title: Site Operations Manager

Date: _____

This page intended to be blank.

3. Owner/ Operator Certification

In order for this SPCC Plan to be effective and meet the requirements of Title 40, Part 112 of the CFR (40 CFR Part 112), the undersigned Owner Operator attests that:

- He/She is familiar with the requirements of 40 CFR Part 112;
- He/She has visited and examined the facility, or has supervised examination of the facility by appropriately qualified personnel;
- This SPCC Plan has been prepared consistent with good engineering practice, including consideration of applicable industry standards and the requirements of 40 CFR Part 112;
- The Plan does not deviate from rule requirements except as allowed and as certified by a professional Engineer;
- Management approves the Plan and has committed resources to implement it;
- Procedures for required inspections and testing have been established; and
- This SPCC Plan is adequate for this facility.

Name: _____

Signature: _____

Position: _____

Date: _____

This certification shall in no way relieve K Road of the responsibility to prepare and fully implement this SPCC Plan in accordance with 40 CFR Part 112.

This page intended to be blank.

4. Plan Maintenance [§112.3, §112.5 and §112.7]

4.1. Requirement to Prepare: [§112.3]

In accordance with §112.3(a), this Plan was completed and fully implemented as of the date noted by facility management in Section 2.0. The K Road facility will maintain a complete copy of this Plan (either electronic or hard copy) on-site. In addition, the Plan will be available to authorized representatives of local, state, or federal governing agencies for on-site review and a copy will be submitted if requested.

4.2. Plan Review and Amendments: [§112.5]

4.2.1. Changes in Facility Configuration: [§112.5(a)]

In accordance with §112.5(a), when there is a change in facility design, construction, operation, or maintenance that materially affects its potential for a discharge, K Road will amend this SPCC Plan within 6 months of the change and implement the amended Plan within 6 months of its completion. These changes may include, but are not limited to:

- Commissioning or decommissioning of bulk storage containers;
- Replacement, reconstruction or movement of bulk storage containers;
- Construction or demolition that might alter secondary containment structures; or
- Changes of products or services, revisions to standard operation, medication of test/inspection procedures, and use of new or modified industry standards or maintenance procedures.

Technical amendments to the SPCC Plan must be certified by a registered Professional Engineer or owner/operator, depending on the level of required changes. Decommissioning or removing containers, or replacing a container with a similar type of container, may not necessarily constitute a technical amendment to the SPCC Plan that requires recertification by a registered Professional Engineer if the change does not materially affect the facility's potential for a discharge. This determination will be made using best professional judgment of the SPCC Plan Coordinator on a case-by-case basis.

Amendments to the Plan will be fully implemented at the facility as soon as possible, but not later than six months after the date of the amendments.

4.2.1.1. Non-Technical Amendments

Minor changes (e.g., non-technical amendments) can be made by the SPCC Plan Coordinator and do not require certification by a registered Professional Engineer. These amendments may include, but not be limited to:

- Change in the name or contact information of individuals responsible for the implementation of this SPCC Plan;
- Change in the name or contact information of spill response or cleanup contractors; or
- Changes in text, tables, figures, forms or other information in the main body and appendices of this SPCC Plan that do not materially affect the facility's potential for a discharge.

4.2.2. Schedule Plan Reviews [§112.5(b)]

In addition to the requirement to make changes to the SPCC Plan, whenever there are certain changes in facility design, construction, operation, or maintenance, this SPCC Plan will be reviewed and evaluated at least once every five years by the SPCC Plan Coordinator. As a result of this review and evaluation, the SPCC Plan Coordinator will amend the SPCC Plan within six months of the review to include more effective prevention and control technology if the technology has been field-proven at the time of the review and will significantly reduce the likelihood of a discharge of oil in quantities that are harmful. Amendments to the Plan will be fully implemented at the facility as soon as possible, but not later than six months after the date of the amendments. Technical amendments to the SPCC Plan must be certified by a registered Professional Engineer or owner/operator.

This Plan will be reviewed and initiated when the construction of Phase I is complete. The next Plan review is scheduled to take place on or prior to 5-years after the completion of Phase I.

The SPCC Plan Coordinator is responsible for initiating and coordinating scheduled SPCC Plan reviews and amendments. Completion of each scheduled SPCC Plan review and evaluation will be documented in the log of SPCC Plan reviews and amendment found in Appendix C. The documentation will include a signed statement as to whether the SPCC Plan will be amended as a result of the scheduled review and evaluation. The statement will include the following words:

"I have completed review and evaluation of the SPCC Plan for the K Road Moapa Solar LLC. facility on [INSERT DATE] and will (or will not) amend the Plan as a result."

Facilities subject to the SPCC requirements are required by §112.5(c) to have technical changes made to their plans certified by a Professional Engineer or owner/operator.

4.3. General Requirements: [§112.7]

As previously indicated, this SPCC Plan has been prepared in accordance with good engineering practice, with management approval at a level with authority to commit necessary resources for full implementation, and with a table, included in Appendix A, that cross-references the location of requirements listed in §112.7 and their location in the Plan.

4.4. Fully Operational Equipment: [§112.7]

K Road currently anticipates the following bulk storage containers, equipment, and secondary containment regulated by 40 CFR 112 listed in Table

Table 4-1:
Bulk Storage Containers and Equipment

Chemical	Use	Storage Location/Type	State	Storage Quantity
Insulating oil	Electrical equipment	Electrical equipment (contained in transformers and electrical switches)	Liquid	25,000 gallons initial fill (temporary)
				250 gallons for storage during operation.
Insulating oil	Misc. photovoltaic (PV) module parts	55-gallon drums	Liquid	Four (4) 55-gallon drums
Insulating oil	Electrical equipment	500 Kilovolt (kV) transformers	Liquid	Three (3) 8,700-gallon 500 kV transformers
Miscellaneous scale inhibitors & algae control chemicals	Corrosion & biological build-up of Reverse Osmosis equipment & pipes	Wastewater Treatment Area	Liquid	Four (4) 55-gallon drums
Acetylene	Welding	Cylinders stored in maintenance buildings	Gas	100 cubic feet
Oxygen	Welding	Cylinders stored in maintenance buildings	Gas	100 cubic feet

Chemical	Use	Storage Location/Type	State	Storage Quantity
Gasoline	Maintenance vehicles	Double walled, ventilated tank	Liquid	5,000 gallons
Diesel fuel	Firewater pump Maintenance Vehicles	Double walled, ventilated tank	Liquid	5,000 gallons

4.5. Deviations and Equivalent Environmental Protection: [§112.7(a)(2)]

4.5.1. Deviations for Integrity Testing

The EPA's SPCC Guidance for Regional Inspectors, Version 1.1, states that in lieu of integrity testing, environmental equivalence can be achieved via monthly inspections for elevated drums and elevated shop-built containers with a capacity less than 30,000 gallons, where all sides of the container are visible. In addition, the guidance states that the EPA recognizes that industry standards typically only require visual inspection for single-use bulk storage containers; therefore, containers that meet these criteria will not be integrity tested.

The preamble to the SPCC Rule revisions issued by the EPA on July 17, 2002 lists the Steel Tank Institute (STI) Standard SP001 as an industry standard that may be used to assist with the integrity testing guidelines required by 40 CFR 112.8(c)(6). STI's Standard SP001 does not require integrity testing for certain aboveground storage tank configurations that are inspected on a regular basis. Further, the EPA's SPCC Guidance for Regional Inspectors also notes that certain tank sizes and configurations may only require frequent visual inspection, in lieu of integrity testing. Therefore, regular inspections will be considered equivalent environmental protection for certain bulk storage containers that meet the STI Standard SP001 criteria.

Deviations and equivalent protection associated with integrity testing are outlined in Section 16.6.3 of the SPCC Plan.

4.5.2. Deviations from Liquid Level Sensing Devices

The EPA's SPCC Guidance for Regional Inspectors, Version 1.1, also states that filling procedure may utilized in place of a physical overfill prevention device. The procedure must be adequate to prevent discharge from filling/refilling.

K Road will have numerous bulk storage containers that do not have liquid level sensing devices installed, because (a) smaller drums and totes are not designed to have such sensing devices and installation of any sensing devices beyond dip-sticks on such

containers would be economically and technically impracticable; or (b) the design of the bulk storage container excluded any liquid level sensing devices. In lieu of liquid level sensing devices, K Road provides the following environmental equivalent measures: all bulk storage containers without liquid level sensing devices will not be refilled (e.g. certain totes and drums); or if bulk storage containers are refilled, they will following procedures provided in Attachment G and refilling will be supervised by trained personnel who will ensure that any spills or overflows from filling or refilling are expeditiously cleaned up and disposed of in accordance with the spill response procedures set forth in this Plan.

5. Facility Description General [§112.7(a)(3)]

5.1. General Facility Information

Name of facility: K Road Moapa Solar Facility

Location of facility: Within the Moapa River Indian Reservation in Clark County, Nevada, approximately one mile west of Interstate 15 and approximately 30 miles northeast of Las Vegas

Name and address of owner:
Name: K Road Moapa Solar LLC

Address: _____

San Diego, California

Designated person accountable for oil spill prevention at facility:

Name and Title: _____Director of Operations

5.2. General Facility Description

The facility will be built in three phases. The first phase consists of the construction and operation of an approximate 150 Megawatt (MW) solar plant including associated facilities. The facility will utilize transformers to step up the voltage to interconnection voltage to facilitate a connection of the facility with one or more of the following: an existing transmission line on tribal lands (up to 500 Kilovolt (kV)), the existing 230 kV Crystal substation operated by Nevada Energy outside tribal lands, and/or the existing 500 kV Crystal substation located outside tribal lands.

The facility is located on approximately 2,153 acres of land. The 2,000 acre solar facility is wholly within the Reservation and the remaining 153 acres is comprised of a high voltage transmission line up to 500 kV, a 16-24 feet wide access road approximately 8 miles long, an approximately 1-mile water pipeline and approximately 3-mile 12kV transmission line linking the Moapa Travel Plaza on the east side of Interstate 15 (I-15) to the Proposed Project substation which will facilitate access to the electric grid for the Travel Plaza. The location of the facility is shown on the Site Location Map, Figure 1, located at the end of this report. The following site characteristics are illustrated on the attached location map (Figure 1).

The general layout and diagram of the facility with the on-site locations of regulated oil use or storage are presented below and on the attached Figure 2. Discharges of any

spilled or released regulated oil are expected to follow storm water runoff flow directions presented in Figure 2 and as described in Appendix D.

The facility includes the following main elements (Figure 2):

- PV solar modules;
- Single tracking systems mounted on embedded pier ballast or foundations;
- Power inverters;
- Three-phase pad mounted transformers that convert the output of each inverter to 34.5 Kv;
- An underground or overhead 34.5kV collection system to convey electricity from the solar field to the on-site substation;
- On-site substation (approximately 15 acres);
- A 5.50-mile interconnection to the Crystal substation via an up to 500kV transmission line;
- A 40-acre Operations and Maintenance (O&M) area to accommodate the O&M building, parking area, temporary laydown area, evaporation/detention pond, and other construction associated facilities;
- A 5.0-mile interior gravel/aggregate perimeter maintenance road;
- An improved approximately 8-mile long service road along existing unimproved road within the Bureau of Land Management (BLM) utility corridor;
- Drainage controls to facilitate and/or slow drainage to existing ephemeral washes;
- Stormwater controls within drainage features to slow flash flood flow to nearby railroad culverts;
- Approximately 7.14 miles of perimeter fence;
- A 20-foot wide fire break around exterior of the perimeter fence;
- An approximately 3.0-mile 12kV transmission line from the solar facility substation to the Travel Plaza; and
- An approximate 1.0 mile water pipeline from the existing Reservation well to the solar facility O&M building.

The facility includes an on-site substation that encompasses approximately 15 acres in total area. The substation includes medium- and high-voltage switchgear and conductor structures, and three (3) 34.5 kV/230 kV and 500 kV transformers (each approximately 50-foot wide by 25-foot long by 20-foot high). Each transformer contains approximately 8,700 gallons of dielectric fluid (mineral oil) and are located on a concrete pad approximately 75-foot long by 50-foot wide surrounded by a 6-inch high earthen or concrete containment berm or integral secondary containment consistent with Resource Conservation and Recovery Act guidelines. The containment area is lined with an

impermeable membrane covered with gravel and would drain to an underground sump. Each transformer pad will be designed and constructed with perimeter secondary spill sumps that will be sized to capture and control the release of a full reservoir of dielectric fluid plus storm water flows resulting from a 100-year storm event. All transformers comply with EPA requirements, which mandate that transformers be placed in such a way that a release of the entire volume of oil in a transformer would not discharge into surface water and would be promptly cleaned up.

Regulated materials at the facility would include transformer oil, hydraulic oil, engine oil, solvents, diesel fuel, unleaded fuel, antifreeze, latex and oil-based paint, paint thinners, cleaning products, herbicides and motor oil. Fuels are stored in aboveground storage tanks and oils and lubricants are typically stored in 5- to 30-gallon pails and buckets, 55-gallon containers or up to 550-gallon tanks. Insulating oils were initially stored in a 25,000-gallon tank required to fill the transformers. The tank will be removed once all transformers are filled. A smaller 250-gallon tank is used to maintain appropriate levels, and the three transformers hold approximately 8,700-gallons each. A detailed description of the facility covered by this Plan is below. Also during substation construction, transformer oil would be transported to the site for use in the main step-up transformers in the substation. Substation transformers typically contain moderate quantities of oil.

5.3. Oil Storage

The following is a description of the oil storage at the K Road facility. Oil storage occurs in the following bulk storage containers:

- One 25,000-gallon insulating oil (for initial fill up of transformers. the tank will be removed once all transformers are filled)
- Three 8,700-gallon 500 kV transformers filled with insulating oil
- One 250-gallon insulating oil
- Four 55-gallon drums insulating oil
- Four 55-gallon drums scale inhibitors & algae control
- One 5,000-gallon steel diesel tank
- One 5,000-gallon steel gasoline tank
- The K Road facility does not contain any transfer stations or connecting pipes

The tanks, containers, and equipment storing regulated oil applicable to this SPCC Plan are listed in Appendix D Petroleum Storage Tank & Container Inventory.

In the event that bulk storage containers become out-of-service, they will remain in the SPCC Plan inventory and will require periodic inspections per Section 9.1 until they are

"permanently closed" or removed from the site. "Permanently closed" is defined by the SPCC regulations as a container for which:

- All liquid and sludge has been removed from the container and connecting lines;
- All connecting lines and piping have been disconnected and blanked off;
- All valves (except ventilation valves) have been closed and locked; and
- Conspicuous signs have been posted on each container stating that it is a permanently closed container and noting the date of closure.

The SPCC Coordinator will be informed of any "permanent closure" activities at the facility so that the SPCC Plan may be updated accordingly.

5.4. Discharge Prevention and Routine Handling Procedures

Discharge prevention measures that are used at K Road facility include the following:

- Implementation of best management practices to prevent spills and releases (e.g., closed containers and tanks, supervised operations) during the handling of oil and during loading or unloading operations,
- Readily available equipment and supplies for spill containment and cleanup,
- Discharge prevention training for applicable operations and maintenance personnel, and
- Visual inspections of tanks, containers, and equipment conducted during the course of normal site visits and operational activities.

Equipment and supplies for spill containment and cleanup are provided at K Road facility and consist of the supplies listed in Table 5-1.

Table 5-1:
Spill Containment and Cleanup Equipment

Item	Location
Various absorbents: pads, socks, "Oil-dry", etc.	Site-Wide

Item	Location
Spill Containment Kits in 20-gallon plastic garbage cans with lids containing: Personal Protective Equipment (PPE) (disposable gloves, boots, coveralls), absorbents, brooms, shovels, dust pans, plastic bags, and tape	Operations and Maintenance Building
Shovels	Operations and Maintenance Building

This material is sufficient to respond to most minor discharges occurring at the facility and to initially contain a major discharge while waiting for additional material or support from outside contractors. The inventory is verified during the scheduled site inspection by designated personnel and is replenished as needed. Additionally, loaders and other heavy equipment are available onsite and may also be dispatched as needed for spill cleanup.

K Road personnel and contractors having key responsibilities under this Plan for spill prevention and response are trained annually to respond to spills, as described in Section 6.1. During training, they will learn how to contain a particular spill and how to properly dispose of material once the discharge has been stopped. Oil spill containment/cleanup supplies are available at the K Road facility to allow for a quick response time and thus a quicker containment time once the discharge has been detected.

K Road personnel responsible for petroleum product handling are trained in visual inspection procedures during the annual SPCC training. Drums and containers containing petroleum products that are delivered to the facility by outside vendors are visually inspected for signs of leaks and corrosion prior to acceptance. Bulk storage tanks containing petroleum products are visual inspected following any fuel transfer operations.

6. Release Response [§112.7(a)(3-5)]

6.1. Release Response Procedures

The following release response procedures were developed in accordance with EPA standards. These procedures were created to assist K Road employees in responding to releases in an efficient manner, while providing for the protection of employees, facilities, and the surrounding environment. No employee is required to respond to any type of release if conditions are unsafe. A complete list of contact names and phone numbers is provided in Appendix E.

Response procedures are listed below:

1. Identify the character, source, amount, and extent of the release. ***Do not enter*** a hazardous area until hazards have been assessed and controlled. ***Stay upwind/uphill*** of any release.

2. Turn off nearby sources of ignition (***if this can be done safely***). Report release to the Supervisor or next in command if the Supervisor is unavailable.

3. The Supervisor on duty shall evaluate the release, and determine if it qualifies as a small release or if the Emergency Response Plan should be activated.

4. Immediately notify SPCC Coordinator for any of the following discharges of petroleum products:

    - Discharge of any quantity that poses an imminent danger or involves injured personnel;
    - Discharge of any quantity that reaches a river or wash;
    - Discharge of any quantity that is not contained by a secondary containment basin or diversionary structure; and/or
    - Any discharge greater than five (5) gallons, even if captured within the secondary containment.

5. If you have not been trained to respond to releases, take no further action and wait for emergency responders.

6. If you have been trained to respond to releases, take active measures to contain the release ***without undue risk of personal injury***. Make sure that proper

personal protective equipment (PPE) is worn to provide skin and respiratory protection from the hazards involved with spill containment, cleanup and disposal. PPE may include hard hat, boots, safety glasses, gloves, and respirators (as necessary).

7. Attempt to extinguish any incipient stage fires.

8. Utilizing valve line ups or other operational measures to stop or slow the release if material is still being released.

9. For releases in a containment area, make sure any valves in the containment wall are closed.

10. For large releases in undiked areas, develop a security perimeter around the impacted area, construct makeshift dikes of materials from the spill kits such as: absorbent materials, pigs, mats or other available materials around the release.

11. Ensure that the spill has been contained and do whatever is necessary to stop it from entering a waterway.

12. For small releases in undiked areas, place absorbent materials directly on the spilled oil.

13. **Never** clear the spill away with water.

A flow chart outlining release response procedures is included in Appendix E.

6.2. Recovered Materials Disposal

Materials recovered during a spill event will be appropriately containerized. Used absorbent material and recovered petroleum-contaminated articles from releases will be placed in roll-off bins.

For spills on gravel or porous earthen material, as much free liquid as possible will be collected with absorptive material or removed prior to excavating the material. All petroleum-contaminated soil must be removed, placed on plastic, and stored in a designated container. K Road will manage the container in a designated area. The spill location will be examined by the Supervisor within 24 hours to verify affected soil has been excavated. All equipment used to excavate affected soil shall be cleaned. The SPCC Coordinator will arrange for petroleum-contaminated soil to be removed from the site in a timely manner.

For large releases that cannot be contained by on-site personnel, the facility will contact a local emergency response contractor. The SPCC Coordinator will contact a disposal company for hazardous material recovery and removal. Recovered materials will be labeled, characterized, and disposed/recycled in accordance with applicable federal, state, and local regulations. K Road employees may not transport wastes off of the facility or on a public road.

6.3. Incidental Releases

Incidental releases resulting from transfer operations are to be cleaned up by K Road employees using an appropriate absorbent at the time of the release. For the purposes of this SPCC Plan, an incidental release is defined as a small release of oil which can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area. Absorbent materials are located at the facility for this purpose. Notification is not required for incidental releases. Releases completely within a secondary containment structure are considered incidental releases.

Any release that poses an imminent danger, involves injured personnel, reaches a wash, creek, or stream; or is not contained by a secondary containment basin or diversionary structure, ***regardless of quantity***, is not considered an incidental release and must be reported to the SPCC Plan Coordinator.

7. Release Notification [§112.7(a)(4)]

7.1. Verbal Notifications to Government Agencies

Government agencies may need to be notified of oil releases that occur. ***All verbal and written notifications to government agencies are to be made by the SPCC Plan Coordinator (or designate) only***. The following notifications must be made as soon as possible after learning of an oil discharge.

7.1.1. Verbal Notifications to Local Agencies

The Clark County Emergency Planning Division, will be notified following a discharge of oil ***of any quantity*** that reaches surface water and causes a sheen, film or discoloration or a discharge that is in excess of reportable quantities. Surface waters in the vicinity of the K Road facility include washes, arroyos, and rivers. Notifications must be made within 15 minutes of knowing that a reportable quantity has been released or a release to surface water has occurred, or as soon as practically possible. Additionally, gasoline spills in excess of 30 gallons must also be reported. The Local Environmental Planning Committee (LPEC) Coordinator telephone number is (702) 455-5710 during business hours. If the LPEC Coordinator is not available or the spill occurs outside of business hours and assistance is needed immediately, call 911.

7.1.2. Verbal Notifications to State Agencies

The Nevada Division of Environmental Protection (NDEP) does not require any verbal notification for oil releases from Above-ground Storage Tanks (ASTs). However, if a release occurs that is classified as an environmental emergency, meaning a sudden threat to the public health or the well-being of the environment, or following a discharge of oil ***of any quantity*** that reaches surface water and causes a sheen, film or discoloration or a discharge that is in excess of reportable quantities the Nevada Emergency Response Hotline should be notified at (775) 687-0400 (emergencies) and (775) 687-0300 (non-emergencies).

7.1.3. Verbal Notifications to Federal Agencies

The National Response Center (NRC) will be verbally notified following a discharge of oil ***of any quantity*** that meets ***any*** of the following conditions:

- Violates applicable water quality standards,
- Causes a film or sheen upon or discoloration of the surface of navigable waters. (e.g., a wash, creek, or stream) or adjoining shorelines, or

- Causes a sludge or emulsion to be deposited beneath the surface of navigable waters or upon adjoining shorelines.

Notifications are to be made as soon as possible, but no later than 24 hours after a reportable release is identified.

The telephone number for NRC notifications is 1-800-424-8802.

7.2. Information to Provide During Verbal Notifications

When notifying a government agency of a release, the following information should be gathered as soon as possible and provided:

1. Name and location of the facility.
2. Specific location where the oil discharge occurred.
3. Your name, position, and telephone number.
4. Date and time of the oil discharge.
5. Information on the oil discharge:
   - Type of material discharged (e.g., diesel),
   - Source of discharge (e.g., aboveground storage tank),
   - Estimated total quantity discharged, including the estimated total quantity of oil discharged to navigable waters or adjoining shorelines,
   - Cause of discharge,
   - Affected media (e.g., soil, surface water),
   - Damages or injuries caused by the discharge,
   - Response actions being used to stop, contain, or clean-up the discharge,
   - Whether the discharge has been stopped, and
   - Whether an evacuation may be needed.
6. Names of other individuals or agencies that were contacted.

Record the following information when making a notification:

- Name and position of person contacted.
- Agency contacted.
- Date and time of notification.
- Information provided to agency.

7.3. Written Notifications to Government Agencies

In addition to verbal notifications, written follow-up reports may need to be submitted to the City, State, and Federal agencies.

7.4. Written Notifications to Local Agencies

The Clark County Office of Emergency Management, in addition to the required verbal notification, may require submittal of a final spill report to the Coordinator ***within 30 days of receiving knowledge of the release***. The spill report should include actions taken to contain the release, acute or chronic health risks associated with the release and any medical actions taken, and measures taken to avoid the recurrence of the release.

The Clark County Office of Emergency Management address is below.

LPEC Coordinator

Clark County Government Center
500 S. Grand Central Pkwy.
Las Vegas, NV 89155-1111

7.5. Written Notifications to State Agencies

The NDEP does not require any written notification for oil releases from ASTs. If a release has been reported to the Nevada State Emergency Response Commission (SERC) they require a final spill report should be sent to them ***within 30 days of receiving knowledge of the release***. The spill report should include actions taken to contain the release, acute or chronic health risks associated with the release and any medical actions taken, and measures taken to avoid the recurrence of the release.

The SERC address is below.

Karen J. Pabón, Executive Director
107 Jacobsen Way
Carson City, Nevada 89711

7.6. Written Notifications to Federal Agencies

A spill report will be submitted to the EPA Region 9 Administrator if either of the following conditions is met:

- A single discharge of more than 1,000 gallons of oil which could reasonably be expected to discharge into or upon ***navigable waters or adjoining shorelines*** in a single event.
- A discharge of more than 42 gallons of oil in each of two events within any 12 month period which could reasonably be expected to discharge into or upon ***navigable waters or adjoining shorelines***.

The spill report to the U.S. EPA must be submitted ***within 60 days of the release*** and contain the following information:

- Name of the facility.
- Name of the owner/operator of the facility.
- Location of the facility.
- Maximum storage or handling capacity of the facility and normal daily throughput.
- Corrective actions and countermeasures taken, including a description of equipment repairs and replacements.
- An adequate description of the facility, including maps, flow diagrams, and topographic maps, as necessary.
- The cause of the discharge, including a failure analysis of the system or subsystem in which the failure occurred.
- Additional preventive measures taken or contemplated to minimize the possibility of recurrence.
- Such other information as the U.S. EPA Regional Administrator may reasonably require pertinent to the SPCC Plan or discharge.

7.6.1. Incident Termination

Once a release has been contained and cleaned-up, and any required verbal notifications have been made, the SPCC Plan Coordinator will take the following actions:

1. If the spill was a reportable release, complete the spill report form in Appendix E and file it with the SPCC Plan in the General Office.
2. Verify that spill response equipment has been re-stocked.
3. Verify that the used oil is properly containerized, labeled, and stored for disposal.
4. Review the cause of and response to the release with supervisors, witnesses, and contractors, if appropriate. Determine additional requirements necessary to prevent recurrence of the incident. Amend the SPCC Plan, if necessary (refer to Section 4.2).

8. Evaluation of Discharge Potential [§112.7(b),(c) & (d)]

8.1. Potential Discharge Volumes

For potential releases due to containment failure, it is conservatively assumed that the worst case scenario would result in the entire contents of a container being released within one hour. Container contents, volumes, secondary containment systems, as well as the resultant flow direction, are discussed in Section 8.2 and/or listed in Appendix D.

8.2. Direction of Flow [§112.7(b)]

Predictions of the direction of flow from a release are shown on Figure 2 and described below.

8.2.1. Off-Site

No off-site drainage enters the mesa or the solar facility; therefore, only surface sheet flow from the facility will need to be accounted for to ensure safe and natural discharge of stormwater.

8.2.2. On-Site

In general, any potential discharges from oil-containing tanks, drums and operational equipment will flow east within the facility. The facility contains six storm water diversions and culverts that direct runoff from the areas of higher elevation on the west side of the facility, around operational areas towards the facility outfalls located on the east side of the facility. The majority of the site drains naturally as sheet flow to the existing drainage features found on site. The drainages contain berm-like structures to slow excessive runoff on the eastern side of the site where elevations decrease and flatten prior to discharge under multiple culverts placed within the existing railroad levee.

The majority of bulk storage containers containing petroleum products and oil-containing equipment are located within the operations and maintenance area and substation located on the northwest side of the facility. Surface water in the operations and maintenance area and substation would most likely enter drainage 4. Drainage 4 leaves the site via a culvert located along the east border of the facility, under the railroad. The California Wash is located approximately 5 miles downstream. It is considered very unlikely that flow from any release will enter a navigable water body.

8.3. Discharge Containment [§112.7(c)]

Methods of spill containment at this facility include a combination of control structures and land-based spill response equipment to prevent petroleum from reaching navigable waters.

8.3.1. Containment and Diversionary Structures

Secondary containment and diversionary structures for the K Road facility include:

- Engineered earthen containment structures
- Double-walled tanks
- Spill pallets
- Sorbent materials
- Drip pans
- Drainage swales
- Bermed areas

Containment and diversionary structures associated with each bulk oil storage vessel at the facility are presented in Appendix D.

8.3.2. Spill Response Equipment

Spill response equipment available to the facility includes:

- PPE (gloves, boots, coveralls)
- Shovels and brooms
- Dust pans
- Trash bags
- Tape
- Barrel
- Absorbent materials (Oily-Dry, socks, pads, rags, etc)

8.4. Practicability of Secondary Containment [§112.7(d)]

The K Road facility provides discharge containment as noted in Section 8.3 above. In addition, the facility adheres to the written procedures identifying measures described in Section 6.1. The facility's written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful is provided in Section 2.0 of this SPCC Plan. The facility utilizes secondary containment for the lubricating oil storages.

8.5. Alternative Requirements to General Secondary Containment for Qualified Oil-Filled Equipment [§112.7(d)]

Oil-filled equipment at the facility will meet the general secondary containment requirements of §112.7(c) through the implementation of active containment controls such as using sorbent materials during spill response activities to prevent the material from reaching a navigable waterway.

9. Inspection, Tests, and Records [§112.7(e)]

External visual inspections of oil storage containers, spill kits, and general housekeeping are generally conducted on a monthly schedule. However, the inspection schedule frequency may vary based on the potential for a release from a bulk storage container to reach navigable waters, frequency of potential interaction between storm water and petroleum products, and the frequency of bulk storage container usage.

The inspection schedule and inspection checklists are in Appendix F and will be maintained for a minimum of 3 years by the SPCC Coordinator. If deficiencies in equipment or in procedures are discovered during the inspections, they will be recorded on the checklist and relayed to the appropriate Supervisor. Signed and dated inspection checklists are maintained with the SPCC Plan. The SPCC Plan Coordinator is responsible for ensuring that deficiencies noted on the checklist are addressed and that corrective actions are noted. The storage container inspection frequency for the facility is described in the following sections.

9.1. Daily Inspections

K Road facility personnel perform daily inspections of their work area on each shift, if the area is operational. This daily visual inspection includes:

- Tank/piping/valve damage or leakage,
- Stained or discolored soils or concrete containment areas,
- Excessive accumulation of water or solution in containment areas, and
- Spill containment supplies (in the event that supplies are used)

The daily inspections do not include written inspection reports; however, if releases or potential release hazards are observed, the SPCC Plan Coordinator will be contacted.

9.2. Monthly Inspections

Monthly visual inspections are conducted for bulk oil storage containers (e.g., drums, totes, and tanks) and are necessary to serve as the environmental equivalence of integrity testing (refer to Section 16.6) for qualifying containers. Containers inspected monthly include all bulk oil storage containers at the K Road facility, identified in Appendix D. The following is a description of items that will be monitored during the inspection.

Spill Containment Areas

- Integrity of the containment/diked areas has not been compromised through the presence of cracks, erosion, or other similar problems
- Evidence of oil
- Debris and vegetation
- Standing water
- Leaks in valves or other piping
- Structural integrity of bulk containers
- Spill containment equipment nearby bulk containers

In addition to visual inspections of bulk containers, employees are trained to look for potential oil-related problems on a day-to-day basis in their respective work areas and to report these to their Supervisor or the SPCC Coordinator.

9.3. Annual Inspections

Visual inspections are performed on an annual basis for operational-use containers, which include the oil-filled transformers and security provisions. In addition, out-of-service tanks that have not been "permanently closed" will be inspected on an annual basis until permanent closure is complete and the containers are removed from the facility's inventory. The following is a description of items that will be monitored during the inspection.

Oil-Filled Equipment

- The outside of each piece of oil-containing equipment for signs of rust or deterioration
- Supports and foundations for evidence of deterioration
- Spill control equipment is stored in designated locations

Security

- Fences and gates are secured

The SPCC Coordinator will accompany the K Road facility personnel responsible for bulk storage container routine inspections on an annual basis.

9.3.1. Certified Inspections

Certified Inspections are not required at the K Road facility because there are no field-erected steel tanks with a storage capacity greater than 50,000 gallons that could potentially discharge to navigable waters.

9.4. Recordkeeping

Inspection records and other documentation related to oil release prevention, such as training records, corrective actions, spill reports, and maintenance records are maintained with the SPCC Plan. The SPCC Plan Coordinator is responsible for ensuring that records are properly filed and retained for at least three years.

10. Employee Training [§112.7(f)]

Oil handling personnel are trained at least annually in the operation and maintenance of equipment to prevent discharges of oil. In addition, informal briefings are held periodically throughout the year to update employees on changes in the regulations, laws, or in-house procedures. New hires that work in areas covered by the SPCC Plan are provided SPCC training during new employee orientation.

The K Road facility has complementary training programs that address the proper handling of oil, hazardous materials, and waste that are present at the facility. The training programs meet the employee training requirements of federal and state regulations as they apply to the contingency plan and emergency responses training.

Common topics covered in applicable training programs may include:

- Identification of hazards,
- Identification of reportable quantities,
- Emergency response measures,
- Release notification procedures,
- Disposal procedures for spilled materials,
- Housekeeping and materials management,
- Hazard communication,
- Awareness training for physical hazards in the workplace, including health effects of chemicals,
- Routine, daily operations in the handling and storage of oil and hazardous materials to prevent discharges (spills),
- Environmental rules, laws, regulations, and codes affecting the facility with respect to the storage and handling of oil and hazardous materials, and
- Contents of this SPCCP.

On-the-job update training is provided to facility personnel handling petroleum whenever there is a change in equipment or procedures relating to any element of this SPCC Plan, or an incident resulting in the release of petroleum.

10.1. SAFETY MEETINGS

The ongoing training program serves to update as well as reinforce the importance of proper operation, maintenance, cleanup, and safety procedures. Ongoing safety and operations training are to be provided through regular meetings. These meetings are mandatory for all personnel involved in facility operations that involve the use of oil and petroleum products.

The safety meeting must highlight and describe known discharges or failures, equipment malfunctions, and any recently developed precautionary measures implemented. Additional topics should be provided by management and supplemented with suggestions from operations and maintenance personnel.

Meetings are held periodically to instruct the employees in operation techniques and known safety hazards in order to maintain a high level of safety awareness. Records of meeting attendance and the topics covered/discussed are kept at the facility.

Training records are maintained for a minimum of 5 years. Sign-in sheets and topics of discussion at each briefing are maintained for documentation.

11. Security [§112.7(g)]

Visiting personnel are not allowed into the facility unless accompanied by an authorized K Road facility employee. Approved visitors to the site access the main entrance of the facility from access road and enter the guard shack or main office for assistance. Personnel who are authorized to access the facility must provide valid identification and wear a visitors badge while on-site. Only authorized, trained personnel are allowed into areas where chemicals are stored. Similarly, only authorized, trained personnel handle materials during material transfers.

11.1. Fencing

The facility is surrounded by an 8-foot high chain link perimeter fence with three strands of barbed-wire at the top. Security at the solar facility includes fencing, lighting, and security patrols. The solar facility will be staffed 24 hours per day, seven days per week. The staff includes full-time security personnel who conduct routine security patrols of the site.

11.2. Valves

Master flow, drain and any other valves that permit flow of oil/ fuel out of a bulk storage container are kept locked in the closed position when in a non-operating, non-standby mode. All outward flow control valves associated with bulk storage containers are within a secure area (i.e., restricted public access) and are accessible only by authorized personnel.

11.3. Pipeline Connections

There are no pipeline connections associated with the majority of bulk storage tanks at the facility. The gasoline and diesel tanks are equipped with a fill pipe that remains capped and closed except when being filled and fill nozzles that are regularly inspected to prevent vapors and fumes from escaping as well as liquid product.

11.4. Lighting

Permanent lighting will be installed along the permanent solar facility road and within the substation and O&M area. Outside lighting will be installed on poles within the O&M area. Lighting will be designed to provide minimum illumination needed to achieve objectives and not emit excessive light to the night sky by focusing desired light in a downward direction. Lighting will not be erected within the solar array field; however, truck-mounted lights may be used at night for maintenance or to provide security

measures when needed. Adequate lighting will be provided, as needed, at bulk storage container locations if fuel management is required during non-daylight hours.

12. Loading and Unloading Racks [§112.7(h)]

There are no tank car and / or tank truck loading / unloading racks at the facility; therefore, the requirements of §112.7(h) do not apply.

13. Brittle Fracture Evaluation [§112.7(i)]

There are no field-erected above ground containers at the facility; therefore, the requirements of §112.7(i) do not apply.

14. Conformance with Regulations [§112.7(j)]

This SPCC Plan was prepared and implemented in compliance with the Oil Pollution Prevention regulations set forth in 40 CFR 112 using good engineering practices, including applicable industrial standards.

15. Facility Drainage [§112.8(b)]

Bulk storage containers and oil-containing equipment are located where a release would drain into on-site drainages, or are contained within berm-like structures to limit releases. The California Wash, located approximately 5 miles away, would be the receiving water body. Facility drainage areas are described in detail in Section 8.2.

If rainwater accumulation within a secondary containment area is excessive, the rainwater may be discharged to the storm water system manually by activating discharge pumps brought in to remove the excess rainwater. Accumulated rainwater in secondary containment areas must be inspected, prior to evacuation, to ensure no oil will be discharged. The procedures for rainwater discharge from secondary containment areas are summarized in Section 16.3.

16. Bulk Storage Containers [§112.8(c)]

16.1. Material of Construction [§112.8(c)(1)]

Containers and equipment that store oil have been constructed of materials that are appropriately matched to ensure compatibility to ensure the oil does not reduce the integrity of the storage units.

16.2. Secondary Containment [§112.8(c)(2)]

Bulk storage containers are provided with secondary containment designed to hold the entire contents of the largest container with sufficient freeboard to contain the rainfall from a 25-year, 24-hour storm event. Secondary containment systems are listed in Appendix D for bulk storage containers.

16.3. Rainwater Discharge from Diked Areas [§112.8(c)(3)]

Prior to releasing water from the secondary containment, a visual inspection will be conducted to determine if there is a visible sheen on the water. If a sheen is not visible, the water will be pumped out using a manually operated sump pump. When in doubt, or if a sheen is visible, water will not be discharged and the SPCC Coordinator will be called. Waters requiring removal from secondary containment that have a sheen will be collected for appropriate off-site disposal. Some of the secondary containment structures at the K Road facility are located indoors or under roof, and do not collect rainwater.

16.4. Completely Buried Metallic Storage Tanks [§112.8(c)(4)]

There are no underground storage tanks at the K Road facility. Therefore, the requirements of §112.8(c) (4) do not apply.

16.5. Partially Buried Metallic Storage Tanks [§112.8(c)(5)]

There are no partially buried or bunkered metallic tanks at the K Road facility. Therefore, the requirements of §112.8(c) (5) do not apply.

16.6. Integrity Testing [§112.8(c)(6)]

In addition to the visual inspections described in Section 9.0, bulk storage containers requiring integrity testing are regularly tested in accordance with the schedule outlined in Section 16.6.1. Integrity testing is also performed when material repairs are made to bulk storage containers. The SPCC Plan Coordinator must be notified whenever material repairs to bulk storage containers are complete. The purpose of integrity testing is to detect cracks, leaks, corrosion, or wall thinning to ensure sufficient structural strength. Integrity testing is accomplished through ultrasonic thickness tests, acoustic emission tests, or another type of non-destructive shell testing. Should the results of an integrity test indicate a significant reduction in structural strength, the container will be repaired or removed from service.

Based on guidelines established by the Steel Tank Institute (STI) Standard ST-001, Standard for the Inspection of Aboveground Storage Tanks, 4th Edition, integrity testing of bulk storage tanks with a capacity greater than 5,000 gallons, but less than 50,000 gallons, would be required. Most bulk storage tanks associated with K Road facility are not stored in containers greater than 5,000 gallons, with the exception of the 25,000-gallon insulating oil tank. The integrity testing requirements would not apply to those containers provided environmental equivalence is applied (see Section 16.6.3).

16.6.1. Integrity Testing Guidelines

Integrity testing is performed by qualified outside contractors. Integrity testing for bulk storage containers at the K Road facility, with less than 50,000 gallons shall follow the guidelines established by the STI Standard SP001 Standard for the Inspection of Aboveground Storage Tanks. Records of integrity tests are maintained in the General Office until the subsequent test is performed, but not for less than three years.

16.6.2. Integrity Testing Exclusions

Integrity testing is not required for operational use containers, such as oil-filled transformers. Operational use containers are visually inspected in accordance with Section 9.0.

Environmental equivalence guidelines can be implemented in lieu of integrity testing for some bulk storage containers at the facility. Environmental equivalence guidelines are discussed in the next section.

16.6.3. Environmental Equivalence

The following guidelines are used by K Road to determine which containers satisfy the integrity testing requirement through environmental equivalence:

- Drums and totes - Drums and totes are not subject to integrity testing if the following measures are implemented to provide environmental equivalence.

Environmental equivalence measures for multi-use drums and totes (i.e., containers that are refilled/reused; not intended for single-use) management may include:

- Perform visual inspections of multi-use drums and totes monthly.
- Elevate multi-use totes so that all sides can be visually inspected.
- Replace the multi-use drums and totes within 10 years of use, or sooner if they are not in good condition or have been damaged.

Environmental equivalence measures for single-use drums and totes management may include:

- Perform visual inspections of single-use drums and totes during the regular facility inspections outlined in this SPCC Plan.
- Elevate single-use drums and totes (using pallets or other support structures).

- Elevated tanks - Integrity testing is not performed on tanks that are elevated high enough off the ground to allow visual inspection of all sides. To provide environmental equivalence, these tanks have secondary containment and are visually inspected for leaks and signs of corrosion on a monthly basis. The visual inspection includes observation of the bottom of the tank.
- Tanks with capacities less than 5,000 gallons - The STI Standard SP001, 4th Edition, classifies shop-built aboveground storage tanks with a secondary containment dike/berm as a Category 1 AST (Table 5.4, Example Tank Configuration and AST Category, Standard SP001). Category 1 ASTs with capacities less than or equal to 5,000 gallons only require periodic inspection (Table 5.5, Table of Inspection Schedules, Standard SP001). The guidance does not recommend formal external/internal inspections (which includes integrity testing) by certified inspectors or leak testing for Category 1 ASTs.

16.6.4. Integrity Testing Schedule

Integrity testing will be performed when reasonable suspicion of structural integrity is raised by deficiencies identified during inspections, by maintenance records, or by age or design life. At a minimum, bulk storage containers that are not exempt from integrity testing requirements, as described in the previous sections, will be tested every 10 years.

The integrity testing frequency is based on implementation of a scheduled inspection/testing program. Bulk storage tanks at the K Road facility have not been integrity tested following STI Standard SP001 and the 12,000 gallon CTI tank has been installed and operated at the facility for more than 10 years. Consequently, K Road will initiate a plan to conduct baseline integrity tests on all non-exempt tanks within 3 months of installation.

Appendix F lists the minimum frequency of integrity testing for each container. For containers which do not undergo integrity testing, the following descriptors are used in Appendix F in place of a frequency:

- operational = containers which do meet the definition of bulk storage
- < 5,000 gallons = containers with a capacity less than 5,000 gallons that meet the STI Standard SP001, Category 1 AST criteria.

Any change to the testing interval will be certified by a registered Professional Engineer or the owner operator and supporting documentation will be noted in this SPCC Plan.

16.7. Heating Coils [§112.8(c)(7)]

The K Road facility covered under this Plan does not have oil storage tanks or vessels equipped with internal heating systems using coil heat exchanger technology. Therefore, the requirements of §112.8(c) (7) do not apply.

16.8. Discharge Warning Devices [§112.8(c)(8)]

The majority of bulk storage containers at the site are single-use (for dispensing only; the container is not refilled). Bulk storage tanks at the K Road facility that are refilled, such as the gasoline and diesel tanks, rely on environmentally equivalent measures to discharge warning devices as described in Section 4.5.2.

16.9. Effluent Treatment Facilities [§112.8(c)(9)]

There are no effluent treatment facilities located at the K Road facility which are covered under this Plan. Therefore, the requirements of §112.8(c)(9) do not apply.

16.10. Visible Discharge [§112.8(c)(10)]

Visible discharges will be promptly cleaned up by properly trained K Road facility personnel following procedures listed in Section 6.1. The SPCC Coordinator will be notified of petroleum discharges, as necessary, according to the release response procedures.

17. Portable Oil Storage Containers [§112.8(c)(11)]

Portable oil storage containers in use at the K Road facility may be temporarily moved to an area when they are needed, but ultimately returned to a suitable storage area. Portable oil storage containers are provided with a sufficient means of secondary containment.

18. Facility Transfer Operations [§112.8(d)]

Generally, the only above ground piping at the K Road facility is associated with the fuel unloading operations conducted adjacent to the bulk storage containers. Any spill resulting during product transfer or equipment failure would remain within the immediate area through the employment of appropriate absorbent materials or temporary containment.

Petroleum products are delivered to the site via tanker trucks or enclosed single-use drums. Both the tanker truck driver and the K Road facility employee are outside during the entire transfer operations. Loading/unloading operations are manually executed via shut off valves requiring continuous operator attention. All drains and outlets of the tanker truck are to be visually inspected by drivers prior to filling and departure from the loading or unloading areas. Any minor drips and /or spills are immediately cleaned up. All petroleum products delivered to tanks follow the Tank Filling Procedure in Appendix G.

If an uncontrolled spill occurs from uncontained tanks or loading/unloading operations or from other areas that escape containment, K Road facility personnel will immediately begin mitigation measures to expeditiously control and remove any harmful quantity of oil discharge in accordance with procedures described in Section 6.1. As appropriate absorbent materials or temporary containment berm secondary containment system will be utilized to retain an uncontrolled spill onsite.

As applicable, all aboveground valves, piping, and appurtenances will be regularly inspected along with the containers as described in Section 9.1 of this Plan.

This page intended to be blank.

K Road Power
Spill Prevention Control and Countermeasures Plan

Figure 1 Location Map
Figure 2 Site Plan

This page intended to be blank.

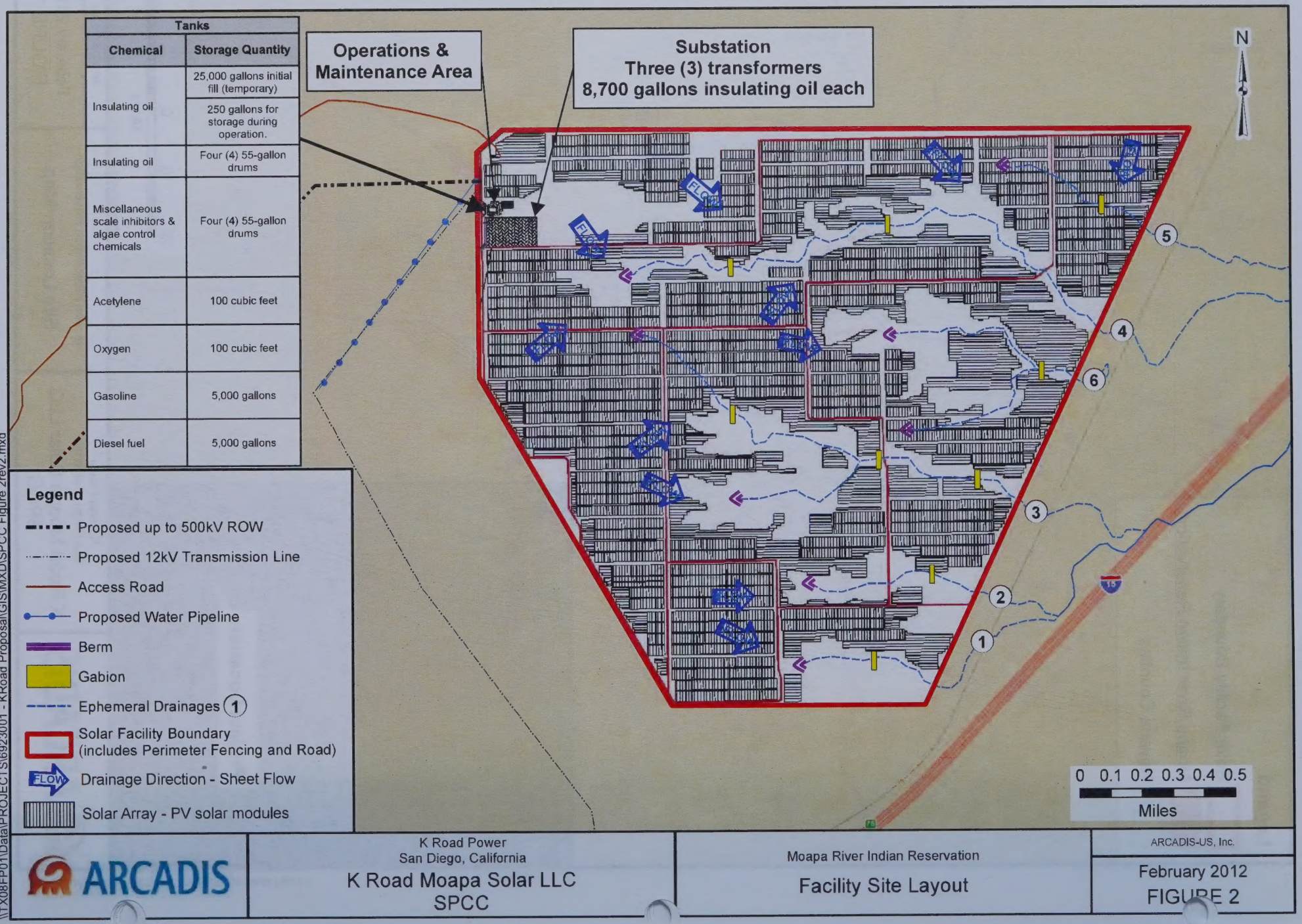
ARCADIS

K Road Power
San Diego, California
K Road Moapa Solar LLC
SPCC

Moapa River Indian Reservation
Site Location Map

ARCADIS-US, Inc.
February 2012
FIGURE 1

Map Document:Austin\6923001\GIS\MXD\BLM Lands Figure 1


Tanks
Chemical
Storage Quantity
Insulating oil
25,000 gallons initial fill (temporary)
250 gallons for storage during operation.
Insulating oil
Four (4) 55-gallon drums
Miscellaneous scale inhibitors & algae control chemicals
Four (4) 55-gallon drums
Acetylene
100 cubic feet
Oxygen
100 cubic feet
Gasoline
5,000 gallons
Diesel fuel
5,000 gallons
Operations & Maintenance Area
Substation
Three (3) transformers
8,700 gallons insulating oil each
N
Legend
Proposed up to 500kV ROW
Proposed 12kV Transmission Line
Access Road
Proposed Water Pipeline
Berm
Gabion
Ephemeral Drainages (1)
Solar Facility Boundary (includes Perimeter Fencing and Road)
FLOW
Drainage Direction - Sheet Flow
Solar Array - PV solar modules
1
2
3
4
5
6
0 0.1 0.2 0.3 0.4 0.5
Miles
\\TX08FP01\Data\PROJECTS\6923001 - KRoad Proposal\GIS\MXD\SPCC Figure 2rev2.mxd
ARCADIS
K Road Power
San Diego, California
K Road Moapa Solar LLC
SPCC
Moapa River Indian Reservation
Facility Site Layout
ARCADIS-US, Inc.
February 2012
FIGURE 2

K Road Power
Spill Prevention Control and Countermeasures Plan

Appendix A. Regulatory Requirements Cross-Reference Table

This page intended to be blank.

SPCC Regulation Cross-Reference Table
Spill Prevention, Control, and Countermeasure Plan
K Road Moapa Solar LLC, Moapa River Reservation, Clark County, Nevada

Requirement	SPCC Reference Section	SPCC Page No.	NA
§ 112.3 Requirement to prepare and implement a Spill Prevention, Control, and Countermeasure Plan.			
(a) (1) If your facility, or mobile or portable facility, was in operation on or before August 16, 2002, you must maintain your Plan, but must amend it, if necessary to ensure compliance with this part, and implement the amended Plan no later than November 10, 2011. If such a facility becomes operational after August 16, 2002, through November 10, 2011, and could reasonably be expected to have a discharge as described in §112.1(b), you must prepare and implement a Plan on or before November 10, 2011. You are not required to prepare a new Plan each time you move a mobile or portable facility to a new site; the Plan may be general. When you move the mobile or portable facility, you must locate and install it using the discharge prevention practices outlined in the Plan for the facility. The Plan is applicable only while the mobile or portable facility is in a fixed (non-transportation) operating mode. a)(1) Except as otherwise provided in this section, if your facility, or mobile or portable facility, was in operation on or before August 16, 2002, you must maintain your Plan, but must amend it, if necessary to ensure compliance with this part, and implement the amended Plan no later than November 10, 2011. If such a facility becomes operational after August 16, 2002, through November 10, 2011, and could reasonably be expected to have a discharge as described in §112.1(b), you must prepare and implement a Plan on or before November 10, 2011. If such a facility (excluding oil production facilities) becomes operational after November 10, 2011, and could reasonably be expected to have a discharge as described in §112.1(b), you must prepare and implement a Plan before you begin operations. You are not required to prepare a new Plan each time you move a mobile or portable facility to a new site; the Plan may be general. When you move the mobile or portable facility, you must locate and install it using the discharge prevention practices outlined in the Plan for the facility. The Plan is applicable only while the mobile or portable facility is in a fixed (non-transportation) operating mode.	Section 1.1	1-2	

(2) If your drilling, production or workover facility, including a mobile or portable facility, is offshore or has an offshore component; or your onshore facility is required to have and submit a Facility Response Plan pursuant to 40 CFR 112.20(a), and was in operation on or before August 16, 2002, you must maintain your Plan, but must amend it, if necessary to ensure compliance with this part, and implement the amended Plan no later than November 10, 2010. If such a facility becomes operational after August 16, 2002, through November 10, 2010, and could reasonably be expected to have a discharge as described in §112.1(b), you must prepare and implement a Plan on or before November 10, 2010. If such a facility (excluding oil production facilities) becomes operational after November 10, 2010, and could reasonably be expected to have a discharge as described in §112.1(b), you must prepare and implement a Plan before you begin operations. You are not required to prepare a new Plan each time you move a mobile or portable facility to a new site; the Plan may be general. When you move the mobile or portable facility, you must locate and install it using the discharge prevention practices outlined in the Plan for the facility. The Plan is applicable only while the mobile or portable facility is in a fixed (non-transportation) operating mode.			X
(b) If your oil production facility as described in paragraph (a)(1) of this section becomes operational after November 10, 2011, or as described in paragraph (a)(2) of this section becomes operational after November 10, 2010, and could reasonably be expected to have a discharge as described in §112.1(b), you must prepare and implement a Plan within six months after you begin operations.			X
(d) Except as provided in §112.6, a licensed Professional Engineer must review and certify a Plan for it to be effective to satisfy the requirements of this part. (2) Such certification shall in no way relieve the owner or operator of a facility of his duty to prepare and fully implement such Plan in accordance with the requirements of this part.	Section 3.0	3-1	
(e) If you are the owner or operator of a facility for which a Plan is required under this section, you must: (1) Maintain a complete copy of the Plan at the facility if the facility is normally attended at least four hours per day, or at the nearest field office if the facility is not so attended, and (2) Have the Plan available to the Regional Administrator for on-site review during normal working hours.	Section 4.0	4-1	
(f) Extension of time. (1) The Regional Administrator may authorize an extension of time for the preparation and full implementation of a Plan, or any amendment thereto. (2) If you are an owner or operator seeking an extension of time under paragraph (f)(1) of this section, you may submit a written extension request to the Regional Administrator.			X

Qualified Facilities. The owner or operator of a qualified facility as defined in this subparagraph may self-certify his facility's Plan, as provided in §112.6. A qualified facility is one that meets the following Tier I or Tier II qualified facility criteria: (1) A Tier I qualified facility meets the qualification criteria in paragraph (g)(2) of this section and has no individual aboveground oil storage container with a capacity greater than 5,000 U.S. gallons. (2) A Tier II qualified facility is one that has had no single discharge as described in §112.1(b) exceeding 1,000 U.S. gallons or no two discharges as described in §112.1(b) each exceeding 42 U.S. gallons within any twelve month period in the three years prior to the SPCC Plan self-certification date, or since becoming subject to this part if the facility has been in operation for less than three years (other than discharges as described in §112.1(b) that are the result of natural disasters, acts of war, or terrorism), and has an aggregate aboveground oil storage capacity of 10,000 U.S. gallons or less.			X
<u>§ 112.4 Amendment of Spill Prevention, Control, and Countermeasure Plan by Regional Administrator.</u>			
(a) Notwithstanding compliance with § 112.3, whenever your facility has discharged more than 1,000 U.S. gallons of oil in a single discharge as described in § 112.1(b), or discharged more than 42 U.S. gallons of oil in each of two discharges as described in § 112.1(b), occurring within any twelve month period, submit the following information to the Regional Administrator within 60 days from the time the facility becomes subject to this section: (1) Name of the facility; (2) Your name; (3) Location of the facility; (4) Maximum storage or handling capacity of the facility and normal daily throughput; (5) Corrective action and countermeasures you have taken, including a description of equipment repairs and replacements; (6) An adequate description of the facility, including maps, flow diagrams, and topographical maps, as necessary; (7) The cause of such discharge as described in § 112.1(b), including a failure analysis of the system or subsystem in which the failure occurred; (8) Additional preventive measures you have taken or contemplated to minimize the possibility of recurrence; and (9) Such other information as the Regional Administrator may reasonably require.	Section 7.2	7-2	

(c) Send to the appropriate agency or agencies in charge of oil pollution control activities in the State in which the facility is located a complete copy of all information you provided to the Regional Administrator.	Section 7.0	7-1	
(d & e) Regional Administrator requirements for SPCC Plan amendment.			X
(f) Appeal of amendment by facility.			X
§ 112.5 Amendment of Spill Prevention, Control, and Countermeasure Plan by owners or operators.			
(a) Amend the SPCC Plan for your facility when there is a change in the facility design, construction, operation, or maintenance that materially affects its potential for a discharge.	Section 4.2.1	4-1	
(b) Complete a review and evaluation of the SPCC Plan at least once every five years. As a result of this review and evaluation, you must amend your SPCC Plan within six months of the review.	Section 4.2.2	4-2	
(c) Except as provided in §112.6, have a Professional Engineer certify any technical amendments to your Plan.	Sections 4.2.1 and 4.2.2	4-1 and 4-2	
§ 112.6 Qualified Facility Plan Requirements.			X
§ 112.7 General requirements for Spill Prevention, Control, and Countermeasure Plans.			
(First Paragraph:)			
- Full approval of management with authority to commit resources.	Section 2.0	2-1	
- Discuss additional facilities or procedures, methods, or equipment not yet fully operational.	Section 4.4	4-3	
- Plan follows sequence of § 112.7, or is supplemented with a section cross-referencing the location of requirements.	Section 1.0 and Appendix A	1-1	
(a)			
(1) Include a discussion of your facility's conformance with the requirements listed in this part.	Section 1.0	1-1	
(2) Except as provided in §112.6, your Plan may deviate from the requirements in paragraphs (g), (h)(2) and (3), and (i) of this section and the requirements in subparts B and C of this part, except the secondary containment requirements in paragraphs (c) and (h)(1) of this section, and §§112.8(c)(2), 112.8(c)(11), 112.9(c)(2), 112.9(d)(3), 112.10(c), 112.12(c)(2), and 112.12(c)(11), where applicable to a specific facility, if you provide equivalent environmental protection by some other means of spill prevention, control, or countermeasure. Where your Plan does not conform to the applicable requirements, you must state the reasons for nonconformance in your Plan and describe in detail alternate methods and how you will achieve equivalent environmental protection.	Section 4.3	4-3	

(3) Describe in your Plan the physical layout of the facility and include a facility diagram, which must mark the location and contents of each fixed oil storage container and the storage area where mobile or portable containers are located. The facility diagram must identify the location of and mark as "exempt" underground tanks that are otherwise exempted from the requirements of this part under §112.1(d)(4). The facility diagram must also include all transfer stations and connecting pipes, including intra-facility gathering lines that are otherwise exempted from the requirements of this part under §112.1(d)(11).	Section 5.1, 5.2; Figures 1 and 2	5-1	
(i) The type of oil in each fixed container and its storage capacity. For mobile or portable containers, either provide the type of oil and storage capacity for each container or provide an estimate of the potential number of mobile or portable containers, the types of oil, and anticipated storage capacities;	Section 5.3; Appendix D	5-2	
(ii) Discharge prevention measures including procedures for routine handling of products (loading, unloading, and facility transfers, etc.);	Section 5.4	5-3	
(iii) Discharge or drainage controls such as secondary containment around containers and other structures, equipment, and procedures for the control of a discharge;	Appendix D	-	
(iv) Countermeasures for discharge discovery, response, and cleanup (both the facility's capability and those that might be required of a contractor);	Section 6.0; Appendix E	6-1	
(v) Methods of disposal of recovered materials in accordance with applicable legal requirements;	Section 6.2	6-2	
(vi) Contact list and phone numbers for the facility response coordinator, National Response Center, cleanup contractors with whom you have an agreement for response, and all appropriate Federal, State, and local agencies who must be contacted in case of a discharge.	Section 7.0; Appendix E	7-1	
(4) Unless you have submitted a response plan under § 112.20, provide information and procedures in your Plan to enable a person reporting a discharge to relate the required information.	Section 7.2	7-1	
(5) Unless you have submitted a response plan under § 112.20, organize portions of the Plan describing procedures you will use when a discharge occurs in a way that will make them readily usable in an emergency, and include appropriate supporting material as appendices.	Section 6.0; Appendix E	6-1	
(b) Where experience indicates a reasonable potential for equipment failure, include in your Plan a prediction of the direction, rate of flow, and total quantity of oil which could be discharged from the facility as a result of each type of major equipment failure.	Section 8.1; Section 8.2; Appendix D	8-1	

(c) Provide appropriate containment and/or diversionary structures or equipment to prevent a discharge as described in §112.1(b), except as provided in paragraph (k) of this section for qualified oil-filled operational equipment, and except as provided in §112.9(d)(3) for flowlines and intra-facility gathering lines at an oil production facility. The entire containment system, including walls and floor, must be capable of containing oil and must be constructed so that any discharge from a primary containment system, such as a tank, will not escape the containment system before cleanup occurs. In determining the method, design, and capacity for secondary containment, you need only to address the typical failure mode, and the most likely quantity of oil that would be discharged. Secondary containment may be either active or passive in design. At a minimum, you must use one of the following prevention systems or its equivalent:			
(1) For onshore facilities:	Section 8.3	8-1	
(i) Dikes, berms, or retaining walls sufficiently impervious to contain oil;			
(ii) Curbing or drip pans;			
(iii) Sumps and collection systems;			
(iv) Culverting, gutters, or other drainage systems;			
(v) Weirs, booms, or other barriers;			
(vi) Spill diversion ponds;			
(vii) Retention ponds; or			
(viii) Sorbent materials.			
(2) For offshore facilities:			
(i) Curbing or drip pans; or			X
(ii) Sumps and collection systems.			X
(d)Provided your Plan is certified by a licensed Professional Engineer (...), if you determine that the installation of any of the structures or pieces of equipment to prevent a discharge is not practicable, you must clearly explain in your Plan why such measures are not practicable; for bulk storage containers, conduct both periodic integrity testing of the containers and periodic integrity and leak testing of the valves and piping; and, unless you have submitted a response plan under § 112.20, provide in your Plan the following:	Section 8.5	8-3	
(1) An oil spill contingency plan following the provisions of part 109 of this chapter.			X
(2) A written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful.			X
(e) Conduct inspections and tests required by this part in accordance with written procedures that you or the certifying engineer develop for the facility. You must keep these written procedures and a record of the inspections and tests, signed by the appropriate supervisor or inspector, with the SPCC Plan for a period of three years.	Section 9.0; Appendix E	9-1	
(f) Personnel, training, and discharge prevention procedures.	Section 10.0	10-1	

(1) At a minimum, train your oil-handling personnel in the operation and maintenance of equipment to prevent discharges; discharge procedure protocols; applicable pollution control laws, rules, and regulations; general facility operations; and, the contents of the facility SPCC Plan	Section 10.0	10-1	
(2) Designate a person at each applicable facility who is accountable for discharge prevention and who reports to facility management.	Section 10.0	10-1	
(3) Schedule and conduct discharge prevention briefings for your oil-handling personnel at least once a year to assure adequate understanding of the SPCC Plan for that facility.	Section 10.0	10-1	
(g) Security (excluding oil production facilities). Describe in your Plan how you secure and control access to the oil handling, processing and storage areas; secure master flow and drain valves; prevent unauthorized access to starter controls on oil pumps; secure out-of-service and loading/unloading connections of oil pipelines; and address the appropriateness of security lighting to both prevent acts of vandalism and assist in the discovery of oil discharges.	Section 11.1, 11.2, 11.3, and 11.4	11-1	
(h) Facility tank car and tank truck loading/unloading rack (excluding offshore facilities).			x
(1) Where loading/unloading area drainage does not flow into a catchment basin or treatment facility designed to handle discharges, use a quick drainage system for tank car or tank truck loading and unloading areas. You must design any containment system to hold at least the maximum capacity of any single compartment of a tank car or tank truck loaded or unloaded at the facility.			x
(2) Provide an interlocked warning light or physical barrier system, warning signs, wheel chocks, or vehicle break interlock system in the area adjacent a loading/unloading rack to prevent vehicles from departing before complete disconnection of flexible or fixed oil transfer lines.	Section 12.0	12-1	
(3) Prior to filling and departure of any tank car or tank truck, closely inspect for discharges the lowermost drain and all outlets of such vehicles, and if necessary, ensure that they are tightened, adjusted, or replaced to prevent liquid discharge while in transit.	Section 12.0	12-1	
(i) If a field-constructed aboveground container undergoes a repair, alteration, reconstruction, or a change in service that might affect the risk of a discharge or failure due to brittle fracture or other catastrophe, or has discharged oil or failed due to brittle fracture failure or other catastrophe, evaluate the container for risk of discharge or failure, and as necessary, take appropriate action.	Section 13.0	13-1	
(j) In addition to the minimal prevention standards listed under this section, include in your Plan a complete discussion of conformance with the applicable requirements and other effective discharge prevention and containment procedures listed in this part or any applicable more stringent State rules, regulations, and guidelines.	Section 14.0	14-1	

(k) Qualified Oil-filled Operational Equipment. The owner or operator of a facility with oil-filled operational equipment that meets the qualification criteria in paragraph (k)(1) of this sub-section may choose to implement for this qualified oil-filled operational equipment the alternate requirements as described in paragraph (k)(2) of this sub-section in lieu of general secondary containment required in paragraph (c) of this section.			X
§ 112.8 Spill Prevention, Control, and Countermeasure Plan requirements for onshore facilities (excluding production facilities).			
(a) Meet the general requirements for the Plan listed under § 112.7, and the specific discharge prevention and containment procedures listed in this section.	*See individual requirements*		
(b) Facility drainage requirements.	Section 15.0	15-1	
(1) Restrain drainage from diked storage areas by valves to prevent a discharge into the drainage system or facility effluent treatment system, except where facility systems are designed to control such discharge.	Section 15.0	15-1	
(2) Use valves of manual, open-and-closed design, for the drainage of diked areas.	Section 15.0	15-1	
(3) Design facility drainage systems from undiked areas with a potential for a discharge to flow into ponds, lagoons, or catchment basins designed to retain oil or return it to the facility.	Section 15.0	15-1	
(4) If facility drainage is not engineered as in paragraph (b)(3) of this section, equip the final discharge of all ditches inside the facility with a diversion system that would, in the event of an uncontrolled discharge, retain oil in the facility.			X
(5) Where drainage waters are treated in more than one treatment unit and such treatment is continuous, and pump transfer is needed, provide two "lift" pumps and permanently install at least one of the pumps.			X
(c) Bulk storage containers.			
(1) Not use a container for the storage of oil unless its material and construction are compatible with the material stored and conditions of storage such as pressure and temperature.	Section 16.1	16-1	
(2) Construct all bulk storage tank installations (except mobile refuelers and other non-transportation-related tank trucks), so that you provide a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation. You must ensure that diked areas are sufficiently impervious to contain discharged oil. Dikes, containment curbs, and pits are commonly employed for this purpose. You may also use an alternative system consisting of a drainage trench enclosure that must be arranged so that any discharge will terminate and be safely confined in a facility catchment basin or holding pond.	Section 16.2	16-1	
(3) Not allow drainage of uncontaminated rainwater from the diked area into a storm drain or discharge of an effluent into an open watercourse, lake, or pond, bypassing the facility treatment system unless you:			
(i) Normally keep the bypass valve sealed closed.			

(ii) Inspect the retained rainwater to ensure that its presence will not cause a discharge as described in § 112.1(b).	Section 16.3	16-1	
(iii) Open the bypass valve and reseal it following drainage under responsible supervision; and			
(iv) Keep adequate records of such events, for example, any records required under permits issued in accordance with §§ 122.41(j)(2) and 122.41(m)(3) of this chapter.			
(4) Protect any completely buried metallic storage tank installed on or after January 10, 1974 from corrosion by coatings or cathodic protection compatible with local soil conditions. You must regularly leak test such completely buried metallic storage tanks.	Section 16.4	16-1	
(5) Not use partially buried or bunkered metallic tanks for the storage of oil, unless you protect the buried section of the tank from corrosion. You must protect partially buried and bunkered tanks from corrosion by coatings or cathodic protection compatible with local soil conditions.	Section 16.5	16-1	
6) Test or inspect each aboveground container for integrity on a regular schedule and whenever you make material repairs. You must determine, in accordance with industry standards, the appropriate qualifications for personnel performing tests and inspections, the frequency and type of testing and inspections, which take into account container size, configuration, and design (such as containers that are: shop-built, field-erected, skid-mounted, elevated, equipped with a liner, double-walled, or partially buried). Examples of these integrity tests include, but are not limited to: visual inspection, hydrostatic testing, radiographic testing, ultrasonic testing, acoustic emissions testing, or other systems of non-destructive testing. You must keep comparison records and you must also inspect the container's supports and foundations. In addition, you must frequently inspect the outside of the container for signs of deterioration, discharges, or accumulation of oil inside diked areas. Records of inspections and tests kept under usual and customary business practices satisfy the recordkeeping requirements of this paragraph.	Section 16.6; Appendix F	16-2	
(7) Control leakage through defective internal heating coils by monitoring the steam return and exhaust lines for contamination from internal heating coils that discharge into an open watercourse, or pass the steam return or exhaust lines through a settling tank, skimmer, or other separation or retention system.	Section 16.7	16-4	
(8) Engineer or update each container installation in accordance with good engineering practice to avoid discharges. You must provide at least one of the following devices:	Section 5.1	5-1	
(i) High liquid level alarms with an audible or visual signal at a constantly attended operation or surveillance station. In smaller facilities an audible air vent may suffice.			
(ii) High liquid level pump cutoff devices set to stop flow at a predetermined container content level.			
(iii) Direct audible or code signal communication between the container gauger and the pumping station.			

(iv) A fast response system for determining the liquid level of each bulk storage container such as digital computers, telepulse, or direct vision gauges. If you use this alternative, a person must be present to monitor gauges and the overall filling of bulk storage containers.			
(v) You must regularly test liquid level sensing devices to ensure proper operation.			
(9) Observe effluent treatment facilities frequently enough to detect possible system upsets that could cause a discharge as described in § 112.1(b).	Section 16.9	16-4	
(10) Promptly correct visible discharges which result in a loss of oil from the container, including but not limited to seams, gaskets, piping, pumps, valves, rivets, and bolts. You must promptly remove any accumulations of oil in diked areas.	Section 16.10	16-4	
(11) Position or locate mobile or portable oil storage containers to prevent a discharge as described in § 112.1(b). Except for mobile refuelers and other non-transportation-related tank trucks, you must furnish a secondary means of containment, such as a dike or catchment basin, sufficient to contain the capacity of the largest single compartment or container with sufficient freeboard to contain precipitation.	Section 17.0	17-1	
(d) Facility transfer operations, pumping, and facility process.			
(1) Provide buried piping that is installed or replaced on or after August 16, 2002, with a protective wrapping and coating. You must also cathodically protect such buried piping installations or otherwise satisfy the corrosion protection standards for piping in part 280 of this chapter or a State program approved under part 281 of this chapter. If a section of buried line is exposed for any reason, you must carefully inspect it for deterioration. If you find corrosion damage, you must undertake additional examination and corrective action as indicated by the magnitude of the damage.	Section 18.0;	18-1	
(2) Cap or blank-flange the terminal connection at the transfer point and mark it as to origin when piping is not in service or is in standby service for an extended time.	Section 18.0	18-1	
(3) Properly design pipe supports to minimize abrasion and corrosion and allow for expansion and contraction.	Section 18.0	18-1	
(4) Regularly inspect all aboveground valves, piping, and appurtenances. During the inspection you must assess the general condition of items, such as flange joints, expansion joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces. You must also conduct integrity and leak testing of buried piping at the time of installation, modification, construction, relocation, or replacement.	Section 18.0; Section 9.0; Appendix F	18-1	
(5) Warn all vehicles entering the facility to be sure that no vehicle will endanger aboveground piping or other oil transfer operations.	Section 18.0	18-1	

K Road Power
Spill Prevention Control and Countermeasures Plan

Appendix B.
Certification of Substantial Harm Determination

This page intended to be blank.

Appendix B
CERTIFICATION OF SUBSTANTIAL HARM DETERMINATION
K Road Moapa Solar LLC
Moapa River Reservation, Clark County, NV

1. Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?
Yes: _____ No: ___X_____

2. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground oil storage tank area?
Yes: _____ No: ___X_____

3. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in 40 CFR 112, Appendix A or a comparable formula) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments?
Yes: _____ No:___X_____

4. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in 40 CFR 112, Appendix A to this or a comparable formula[1]) such that a discharge from the facility would shut down a public drinking water intake?
Yes: _____ No: ___X_____

5. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years?
Yes: _____ No: ___X_____

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

_____
Signature

_____
Name

Site Operations Director
Title

_____

[1] If a comparable formula is used, documentation of the reliability and analytical soundness of the comparable formula must be attached to this form.

This page intended to be blank.

K Road Power
Spill Prevention Control and Countermeasures Plan

Appendix C.
SPCC Plan Review Log

This page intended to be blank.

Appendix C
SPCC Plan Review Log
K Road Moapa Solar LLC – Moapa River Reservation, Nevada

Plan Reviews

Review Date	Reviewed by	Revision Required?	Signature / Date	Comments

By signing this review log, the SPCC Plan reviewer certifies that the following statement is true on the date that it is signed:
"I have completed a review and evaluation of the SPCC Plan for the K Road Moapa Solar LLC, Moapa River Reservation, NV facility and will (or will not) amend the plan as a result".

Plan Revisions

Revision Date	Revision Scope	P.E. certification required?	Certifying Engineer	Licensing State and Registration No.

This page intended to be blank.

K Road Power
Spill Prevention Control and Countermeasures Plan

Appendix D.
Petroleum Storage tanks, Containers, and Oil-filled Equipment Inventory

This page intended to be blank.

Appendix D
Transformer Inventory

Spill, Prevention, Control and Countermeasures Plan
K Road Moapa Solar LLC
Moapa River Reservation, Nevada

SPCC ID Number	Facility Area	Contents	Nominal Capacity (gal)	In use? Y/N	MOC
Transformers					
T-1	Substation	Transformer Oil	8,700	N	Steel
T-2	Substation	Transformer Oil	8,700	N	Steel
T-3	Substation	Transformer Oil	8,700	N	Steel

This page intended to be blank.

K Road Power
Spill Prevention Control and Countermeasures Plan

Appendix E.
Spill Reporting Matrix, Contact List and Spill Log

6923001 / AUS

This page intended to be blank.

Spill Occurs

If there is an imminent threat to public health (such as fire), **call 911**

Report to the Shift Supervisor who will contact K Road SPCC Coordinator

Spill of oil - is oil contained within the spill containment pallet or secondary containment for transformer or container?

Yes

Is secondary containment free from damage and can you verify no release of oil to soil or water?

Yes

Contact the onsite K Road Supervisor for cleanup and disposal procedures. No other reporting required

No

No

Spill to Soil? Of oil or hazardous substances?

Yes

Yes

Is spill of **oil** >1,000 gallons?

No

Yes

Within 60 days report release to EPA Regional Administrator

Is spill of **hazardous substance**?

Yes

Is spill > reportable quantity at 40 CFR 302.4?

Yes

No

Spill to Water? Of petroleum or reportable quantity of a hazardous substance? (Including washes, seasonally dry streams, and wetlands)

Yes

Immediately call National Response Center

Immediately call Nevada Emergency Management Department

Immediately call Nevada Department of Environmental Protection

AND

Conduct cleanup, document activities, and file if report is not requested.

AND

Complete response/cleanup documentation if requested

Emergencies (Fire, Police, Ambulance)	911
Nevada Emergency Management Dept.	775-687-0400
Nevada Dept. of Environmental Protection	1-888-331-6337
USEPA (National Response Center)	800-424-8802
Local Response Contractor: XXXXXXXX	XXXXXXXXX

This page intended to be blank.

Appendix E
K Road Moapa Solar LLC
Spill Prevention, Control, and Countermeasure Plan
Contact List

EMERGENCY CONTACTS			
Name	**Organization**	**Role**	**Contact Number**
	K Road Moapa Solar LLC (K Road)	SPCC Coordinator/ Senior EHS Specialist	
	K Road Moapa Solar LLC (K Road)	Site Operations Director	
	K Road Moapa Solar LLC (K Road)	Safety Manager	
	K Road Moapa Solar LLC (K Road)	PSM Program Manager	
	K Road Moapa Solar LLC (K Road))	Senior Plant Engineer	
	K Road Moapa Solar LLC (K Road)	Welder & Mech Supervisor	
	K Road Moapa Solar LLC (K Road)	Director of Maintenance	
-	XXXXXX	Emergency Response Contractor	
OUTSIDE AGENCY NOTIFICATIONS FOR RELEASES			
Name	**Organization**	**Role**	**Contact Number**
-	Fire, Police, Ambulance	Medical Emergencies	911
	Moapa Valley Fire District	Fire Protection and Medical Emergency	911 (702) 398-3623
-	Clark County Emergency Management Department	Release Notification (Reportable Quantity)[1]	(702) 455-5710 (business hours)
-	Nevada Emergency Management	Release Notification (Emergencies)[1]	(775) 687-0400 (emergencies) (775) 687-0300 (non-emergencies)
	Nevada Department of Environmental Protection	Release Notification (Reportable Quantity)	1-888-331-6337 (NDEP Spill Reporting Hotline)

Appendix E
K Road Moapa Solar LLC
Spill Prevention, Control, and Countermeasure Plan
Contact List

	Bureau of Land Management State HazMat Coordinator	Release Notification (Reportable Quantity)	(775) 861-6570 (business hours) (775) 883-3535 (outside business hours)
-	National Response Center (NRC)	Release Notification (Reportable Quantity)[1]	1-800-424-8802

[1] See SPCC Plan Section 7.0 for details

Appendix E
K Road Moapa Solar LLC
Spill Prevention, Control, and Countermeasure Plan
Spill Log

Discharge/Discovery Date:		**Time:**	
Facility Name:	K Road Moapa Solar LLC		
Facility Location (address):	Moapa River Reservation, Clark County, Nevada		
Name of Reporting Individual:		**Telephone Number:**	
Type of Material Discharged:		**Estimated Total Quantity Discharged:**	Gallons/Barrels
Source of the Discharge:		**Media Affected:**	Soil
			Water
			Other
Actions Taken:			
Damage or Injuries:	No Yes	**Evacuation Needed:**	No Yes
Organization and Individuals Contacted: (include dates and times)	National Response Center		
	Cochise County Emergency Planning Division		
	Cleanup Contractor		
	Facility Personnel		
	Arizona Emergency Response		
	Other		

Note: Complete all sections of this form. If section is not applicable, indicate so with "NA."

[1] For spills of greater than 1000-gallons oil into navigable waters of the U.S. see Section 7.3.3 for additional EPA reporting obligations.

[2] For 2 spills of 42-gallons or more into navigable waters of the U.S. within a 12 month period, see Section 7.3.3.

[3] See Appendix E, Spill Reporting Matrix and Contact List to determine reporting requirements.

This page intended to be blank.

K Road Power
Spill Prevention Control and Countermeasures Plan

Appendix F.
Inspection Form and Checklist

This page intended to be blank.

Appendix F
Inspection and Testing Frequency
Spill Prevention Control and Countermeasures Plan
K Road Moapa Solar LLC
Moapa River Reservation, Nevada

SPCC Tank ID	Facility Area	Contents	Nominal Capacity (gal)	Inspection Frequency	Integrity Testing Frequency	Last Integrity Testing Date
Tanks						
SPCC-1	Operations & Maintenance	Insulating Oil	250	Monthly	N/A (< 5,000 gal)	N/A
SPCC-2	Operations & Maintenance	Gasoline	5,000	Monthly		N/A
SPCC-3	Operations & Maintenance	Diesel Fuel	5,000	Monthly		N/A
SPCC-4	Operations & Maintenance	Acetylene		Monthly	N/A (< 5,000 gal)	N/A
SPCC-5	Operations & Maintenance	Oxygen		Monthly	N/A (< 5,000 gal)	N/A
Drum Storage Areas						
Drum Storage A	Operations &	Lubricting Oil	55 gallon drums	Monthly	N/A - equivalence	N/A
Drum Storage B	Operations & Maintenance	Corrosion & biological build-up of Reverse Osmosis equipment & pipes	55 gallon drums	Monthly	N/A - equivalence	N/A
Transformers						
T1 - T3	Substation	Transformer oil	8,700	Annually	N/A - operational	N/A

This page intended to be blank.

K Road Power
Spill Prevention Control and Countermeasures Plan

Appendix G.
Tank Filing Procedures

This page intended to be blank.

Appendix G
Tank Filling Procedures
K Road Moapa Solar LLC

Bulk tanks that are vendor filled include the 5,000 gallon bulk gasoline tank at the Operations and Maintenance (O&M), 5,000 gallon diesel tank at the O&M area, 250 gallon Insulating oil tank at the O&M area. Refueling will occur during plant operating hours.

1. Vendors will sign in at guard gate and verify order to unload fuel.
2. Verify that tank has adequate volume to receive product.
3. Chock wheels or set parking brake.
4. Turn off engine unless engine is required for refueling tank.
5. Remove Cap and connect refueling lines
6. Open master flow control valve
7. Refueling the Operator is required to stay within sight of refueling starter control and be accompanied by K Road personnel. In the event of a spill immediately stop refueling and report to K Road personnel. K Road personnel will follow spill response measures and utilize nearby spill response equipment to contain any spill within the immediate area.
8. Do not add fuel in excess of tank capacity.
9. Turn off master flow control valve before disconnecting lines.
10. Secure cap on refueling pipeline.

This page intended to be blank.

Appendix F

Site Restoration Plan

This page intended to be blank.

ARCADIS

Infrastructure · Water · Environment · Buildings

Imagine the result

K-Road Moapa Solar Generation Facility

Habitat Restoration and Revegetation Plan

January 2012

This page intended to be blank.

ARCADIS

Signature Chad Martin
Principal Project Manager

Signature John Kinsey
Biologist

This page intended to be blank.

1. Introduction 1

1.1 Purpose 1

1.2 Goals and Objectives 1

1.3 Project Description 1

1.3.1 Project Area 1

1.3.2 Project Components 3

2. Soils 3

3. Vegetation 3

3.1 Special Status Species 4

4. Seed Collection 4

5. Seed Dispersal 5

6. Phases of Restoration and Revegetation 6

6.1 Post-Construction 6

6.2 Post-Decommission 6

7. Weed Management 6

8. Monitoring 7

9. References 7

Figures

Figure 1 Area Map 2

Acronyms and Abbreviations

BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
HRRP	Habitat Restoration and Revegetation Plan
kV	kilovolt
NWMP	Noxious Weed Management Plan
O&M	Operations and Maintenance
Project	K Road Moapa Solar Facility
Proponents	K Road Power
PV	Photovoltaic
Reservation	Moapa River Indian Reservation
ROW	Right-of-Way
Tribe	Moapa Band of Paiute Indians

1. Introduction

1.1 Purpose

The K Road Moapa Solar Generation Facility (Project) has been proposed by the Bureau of Indian Affairs (BIA) and the Moapa Band of Paiute Indians (Tribe) on 2,153 acres of land within the Moapa River Indian Reservation (Reservation) in the Mojave Desert in Clark County, Nevada. The purpose of this Habitat Restoration and Revegetation Plan (HRRP) is to return the land used throughout the life of this Project to conditions, as closely as practical, to its pre-construction conditions.

1.2 Goals and Objectives

- To utilize native plant species in the revegetation process whenever and wherever possible and practical.
- To re-establish vegetation as quickly as necessary to minimize erosion and invasion of species inconsistent with the desired plant community.
- To maximize the cover and diversity of locally adapted natives in the final re-established vegetation community, consistent with the density and composition of undisturbed vegetative communities within the Project area.

1.3 Project Description

1.3.1 Project Area

The Reservation consists of 71,954 acres of land located approximately 25 miles northeast of Las Vegas, Nevada (Figure 1).

The Reservation is located in the Basin and Range physiographic province in the north central portion of the Mojave Desert. Basin and Range structure in the Mojave Desert is characterized by rather abrupt mountain ranges, generally of moderate height. The topography of the Basin and Range consists primarily of exposed bedrock that is deeply cut by ravines and is surrounded by aprons of pediments and/or low-profile bajada slopes, which drain to interior closed basins (Benson and Darrow 1981; Longwell et al. 1965). The general ecological setting of the Project is consistent with Mojave Desert scrub. The area is dominated by open stands of creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*).

Map Document:Austin\6923001\GIS\MXD\BLM Lands Figure 1

ARCADIS	K Road Power San Diego, California K Road Moapa Solar Facility	Moapa River Indian Reservation Project Location Map	December 2011 FIGURE 1

1.3.2 Project Components

The Project facilities will disturb an approximate total area of 2,153 acres on the Reservation. The photovoltaic (PV) solar arrays, substation, and operations and maintenance (O&M) building and parking will be contained within a 2,000 acre solar facility footprint; the up to 500 kilovolt (kV) transmission line corridor will impact approximately 100 acres and have a length of approximately 5.50 miles; the water line will impact approximately 3 acres and have length of approximately 1-mile; the 12kV transmission line will impact approximately 9 acres of land, half of which is currently an unimproved road, and have a length of approximately 3-miles. The Project site is adjacent to an existing 4,000 foot wide utility corridor that has a direct path to the Crystal substation. The Crystal substation itself lies within 5 miles of the Project's northwest boundary.

2. Soils

The poorly developed soils, almost completely absent in some areas, are mostly clayey sands, usually with abundant caliche-coated rocks present. Site soils are generally shallow, typically about 4 inches in depth over an underlying caliche layer. Near the base of the Arrow Canyon Range the valley fills give way to bedrock pediment and eventually to an abrupt upward change in slope at the base of the core of the mountain where benched outcrops of sedimentary facies are exposed. On the core of the mountain, shallow soils are typically present only in small areas where the gradient is less steep.

3. Vegetation

There are approximately 200 endemic plant species found in the Mojave Desert. These plants are typically tolerant of low humidity, prolonged droughts, desiccating winds, high alkalinity or salinity, rocky or very sandy soils, and the periodic influx of high quantities of water in the form of surface flooding (NDOW 2006).

The general ecological setting of the Project is consistent with Mojave Desert scrub. The area is dominated by open stands of creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Desert saltbush scrub habitat and cactus-yucca scrub are also present and concentrated within the ephemeral washes. Cacti species observed during the biological surveys were the barrel cactus (*Ferocactus acanthodes*), beavertail cactus (*Opuntia basilaris*), cottontop cactus (*Echinocactus polycephalus*), hedgehog cactus (*Echinocereus engelmanii var. chrysocentrus.*), pencil cholla (*Cylindropuntia ramosissima*), silver cholla (*Cylindropuntia echinocarpa*) and teddybear cholla (*Cylindropuntia bigelovii*). Arabian grass (*Schismus arabicus*), snakeweed

(*Gutierrezia sp.*), desert trumpet (*Eriogonum inflatum*), catclaw (*Acacia greggii),* Mojave Yucca *(Yucca schidigera)* and winged saltbush (*Atriplex canescens*) were also identified.

3.1 Special Status Species

It is unlawful to cut, destroy, mutilate, remove or possess any Christmas tree, cactus, yucca or branches thereof, or knowingly transport or sell any [of same] from any of the lands owned by or under the jurisdiction of the State of Nevada or its counties, or on any reserved or unreserved lands owned by the United States, or from any privately owned lands, without written permission from the legal owner, or his duly authorized agent, specifying locality by legal land description and number of plants to be removed or possessed **(NRS 527.101)**.

This will be applied to all areas of proposed disturbance throughout the Project, BLM and Tribal lands. Relocation of cacti and yucca from areas of disturbance to areas unaffected by construction activities, or replacement of such vegetation to areas of temporary disturbance, post-construction, will be conducted at the discretion of the Tribe. Such practices would be conducted by qualified biologist familiar with the ecology and life history of cacti and yucca species indigenous to the Project area. Removal of any cacti or yucca species will only take place after consulting with and gaining permission from the Tribe.

4. Seed Collection

In all areas that require grading within the Project area, topsoil will be salvaged to a depth of 4 inches, where possible, and stockpiled in an approved on-site location away from drainages and other sensitive biological resources as outlined in the Nevada Guidelines for Revegetation so that these areas may be reseeded with the natural seed bank (Nevada State Clearinghouse 1998). If using this method of seed collection from these areas is not practical, then a certified weed free seed source will be obtained from a local seed supplier familiar with native species. All seed will originate from the Project region, within approximately 1,000 feet elevation of the Project area (Nevada State Clearinghouse 1998). If native seeds are not available, seeds of non-invasive, non-native, naturalized species would be used.

The most commonly found species of the Mojave Desert scrub community is the creosote bush (*Larrea tridentate*). Approximately 70 percent of the Mojave Desert is covered by creosotebush-white bursage (*Ambrosia dumosa*) associations. Species associated with creosotebush-white bursage communities in the Mojave Desert include Shockley's goldenhead (*Acamptopappus shockleyi*), Anderson's wolfberry (*Lycium andersonii*), range ratany (*Krameria parvifolia*),

Mojave yucca (*Yucca schidigera*), California joint fir (*Ephedra funerea*), spiny hopsage (*Grayia spinosa*), and winterfat (*Krascheninnikovia lanata*) (Feller 2010). Other associated species are desertsenna (*Cassia armata*), Nevada ephedra *(Ephedra nevadensis)*, white burrobrush *(Hymenoclea salsola)* and wolfberry (USDAFS 2010). Grasses regularly found are big galleta (*Hilaria rigida*), Indiana rice grass (*Oryzopsis hymenoides*), bush muhly (*Muhlenbergia porteri*), fluff grass (*Erioneuron pulchella*), red brome (*Bromus rubens*), desert needle (*Stipa speciosa*), Arabian grass (*Schismus arabicus*), snakeweed (*Gutierrezia*), desert trumpet (*Eriogonum inflatum*), winged saltbush (*Atriplex canescens*), and desert grass (*Blepharidachne kingii).*

5. Seed Dispersal

Revegetation will occur within a few weeks of completion of soil disturbing construction activities, prior to the next rainy season in each area where restoration activities are not impaired by the Project infrastructure. Subsoil removed from graded areas will be used as base fill material where fill is required to return disturbed areas as close to their pre-construction contours as possible. After final contours are made, salvaged topsoil will be spread over all re-contoured areas to provide a natural seed bank for post-construction revegetation (Nevada State Clearinghouse 1998). In areas where reseeding with stockpiled topsoil is not possible or practical, a BLM and BIA approved, certified weed free seed mixture will be obtained from a local seed supplier familiar with native species. All seed will originate from the Project region, within approximately 1,000 feet elevation of the Project area (Nevada State Clearinghouse 1998). If native seeds are not available, seeds of non-invasive, non-native, naturalized species, approved by both BLM and BIA, would be used.

In areas where topsoil stockpiling is not practical, revegetation steps will include:

- Harrowing or disking disturbed soil where practical
- Broadcasting native, or naturalized, seeds
- Application of weed free mulch or straw for seed protection
- Disking or rolling to provide soil-seed contact where possible
- Watering as required

When seed broadcasting is necessary, seeds will be hand broadcasted to protect solar equipment from any damages potentially caused by machinery.The optimal time to implement habitat restoration is when sufficient soil moisture is present to allow for seed bed preparation (Nevada

State Clearinghouse 1998). Water trucks will be used to moisten soil for seed propagation as needed when precipitation is below average during seed propagation, post decommission, and water used for dust control will be used for seed propagation while the facility is in use.

6. Phases of Restoration and Revegetation

Habitat restoration and revegetation will occur in two phases; 1) Post-construction and 2) Post-decommission.

6.1 Post-Construction

The post-construction phase of the HRRP will begin immediately after construction of the facility is complete. During this phase, areas of disturbance no longer in use (i.e. service roads, under or adjacent to solar modules) will be restored as closely as possible to their pre-construction conditions using techniques described in previous sections.

In addition to restoring areas of temporary disturbance, revegetation of bare ground located between PV arrays will be completed with seeds of native herbaceous plants. The revegetation of these areas will decrease erosion and help maintain the structural integrity of the solar field as well as provide foraging areas for native wildlife. Areas of revegetation within the solar field will be maintained at a height of no greater than 12 inches so that the vegetation will not interfere with the O&M of the facility.

6.2 Post-Decommission

The second phase of the HRRP will take place following decommission of the facility. During this phase, areas of disturbance that were not restored or revegetated during the first phase, as well as any new areas of disturbance, will be restored as closely as possible to their pre-construction conditions using techniques described previously. Post-decommission restoration will only take place within the 2,000 acre solar facility footprint including the 20 feet wide fire buffer surrounding the solar facility; all other associated features will remain in place.

7. Weed Management

The BLM has requirements for invasive and noxious weed management for the portion of the Project on BLM land. The Tribe has not yet adopted such regulations, therefore, the same BLM guidelines will be used throughout the entire Project area. Methods of noxious weed and invasive

species identification, prevention and treatment for the Project are outlined in the Project's Weed Management Plan (WMP).

8. Monitoring

All areas either restored or revegetated will be done so at a density and composition consistent with the native, non-invasive, vegetative communities of the adjacent areas (NDEP, No Date). Monitoring of the restoration and revegetation areas will be conducted by a qualified biologist knowledgeable in the area of habitat restoration and revegetation of Nevada. Monitoring surveys will be implemented by conducting line transects, collecting data on species composition and Density. During each monitoring effort, an on-site undisturbed area of quality Mojave desert scrub habitat will be used as a reference site against which the restoration and revegetation data will be compared. The same reference site will be used throughout the entire restoration process for consistency of comparison data. Monitoring will begin immediately after completion of revegetation and restoration efforts and will be conducted quarterly until all restored and revegetated areas have developed a species composition and density consistent with or similar to the reference site.

If it is determined during monitoring sessions that the restoration and revegetation methods outlined in this HRRP are not meeting expectations and requirements, new methods will be investigated and employed immediately.

9. References

Benson & Darrow. 1981. Trees and shrubs of the southwestern deserts. The University of Arizona Press, Tucson, Arizona.

Longwell, C. R., Pampeyan, E.H., Boweyer, B., and Roberts, R.J. 1965, Geology and mineral deposits of Clark County, Nevada: Nevada Bureau of Mines and Geology Bulletin 62, 218p.

NDEP. No Date. Nevada Guidelines for Successful Revegetation for the Nevada Division of Environmental Protection, the Bureau of Land Management, and the U.S.D.A. Forest Service. http://ndep.nv.gov/bmrr/reveg.pdf. Accessed December 6, 2011.

NDOW. 2006. Nevada Wildlife Action Plan. http://www.ndow.org/wild/conservation/cwcs/index.shtm. Accessed December 6, 2011.

Nevada State Clearinghouse. 1998. Nevada Guidelines for Revegetation. http://heritage.nv.gov/reveg.htm. Accessed December 7, 2011.

Appendix G

Cultural Resources Documentation - Section 106 Consultation

This page intended to be blank.

ARCADIS
Infrastructure, environment, buildings

Imagine the result

K Road Moapa Solar LLC

Moapa Band of Paiute Indians
Solar Generation Facility
Cultural Resource Inventory
Moapa Indian Reservation
Clark County, Nevada

February 2011

This page intended to be blank.

ARCADIS
Infrastructure, environment, buildings

Imagine the result

K Road Moapa Solar LLC

Moapa Band of Paiute Indians Solar Generation Facility Cultural Resources Inventory Moapa Indian Reservation Clark County, Nevada

BLM Cultural Resource Report No. 5-2669

August 2011

This page intended to be blank.

LEO M. DROZDOFF, P.E.
Director
Department of Conservation and Natural Resources

RONALD M. JAMES
State Historic Preservation Officer

BRIAN SANDOVAL
Governor

STATE OF NEVADA

Address Reply to:
901 S. Stewart Street, Suite 5004
Carson City, NV 89701-5248
Phone: (775) 684-3448
Fax: (775) 684-3442

www.nvshpo.org

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION OFFICE

November 8, 2011

Catherine Wilson
Acting Deputy Regional Director – Trust Services
Bureau of Indian Affairs
Western Regional Office
2600 North Central Avenue
Phoenix AZ 85004-3008

RE: Approval of a Lease for the Moapa Band of Paiute Indians Solar Generation Facility and Grants of Easement for Associated Transmission Lines, Access Roads, and a Water Line, Clark County (Undertaking #2011-1607).

Dear Ms. Wilson:

The SHPO has reviewed the subject undertaking for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended. The subject cultural resource inventory report was completed following an intensive archaeological and historic inventory of the APE. The SHPO concurs with the Bureau of Indian Affairs' determination that the following site is not eligible for the National Register of Historic Places under any of the Secretary's criteria:

26Ck9415.

The SHPO concurs with the Department of the Bureau of Indian Affairs' determination that no historic properties were found within the area of potential effects (APE) for the subject undertaking and no properties will be affected by the undertaking.

If buried and previously unidentified resources are located during project activities, the SHPO recommends that all work in the vicinity cease and this office be contacted for additional consultation per 36 CFR 800.13.b.3. and NRS 383.150-383.190.

If you have any questions concerning this correspondence, please feel free to contact me at (775) 684-3443 or by e-mail at rlpalmer@shpo.nv.gov.

Sincerely,

Rebecca Lynn Palmer, Deputy
State Historic Preservation Officer

This page intended to be blank.

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 North Central Avenue
Phoenix, Arizona 85004-3008

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
Environmental Quality Services

OCT 26 2011

Mr. Ronald M. James
State Historic Preservation Officer
Department of Conservation and Natural Resources
Nevada State Historic Preservation Office
901 South Stewart Street, Suite 5004
Carson City, Nevada 89701-5248

Dear Mr. James:

As Agency Official for purposes of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), we wish to consult with you about the proposed undertakings: **approval of a lease for the Moapa Band of Paiute Indians Solar Generation Facility and grants of easement for associated transmission lines, access roads, and a water line (Project No. 2010-231).** This project would occur on lands of the Moapa River Indian Reservation and Bureau of Land Management (BLM). As noted in our previous correspondence dated May 9, 2011, the proposed project can be characterized as a solar photovoltaic electricity generating facility with eventual capability to produce up to 350 kV. The proposed federal undertakings would entail 1) lease and right-of-way approvals by the Bureau of Indian Affairs (BIA); and 2) right-of-way approval by the BLM for a 500 kV transmission line connecting to the Crystal Substation and associated access roads.

The consulting parties for the project have been identified as the BLM Las Vegas Field Office and Moapa Band of Paiute Indians as identified at 36 CFR 800.3(d). In consultation with these parties, we have made a reasonable and good faith effort to carry out appropriate identification efforts as prescribed at 36 CFR 800.4. We have gathered sufficient information to evaluate the eligibility of the identified properties for the National Register of Historic Places (National Register) and make a determination of effect. Documentation of this finding is provided in the enclosed report and supplementary documentation regarding visual effects:

Moapa Band of Paiute Indians Solar Generation Facility Cultural Resources Inventory, Moapa Indian Reservation, Clark County, Nevada (Späth, August 2011).

In our application of the regulations regarding effects of the undertakings on historic properties, we have arrived at a determination of **"No Historic Properties Affected"** pursuant to 36 CFR 800.4(d)(1). A prominent historic property in the area of potential

effects (APE) is the Old Spanish Trail/Mormon Road (Trail). This has been designated a National Historic Trail, the main route of which lies opposite Interstate 15 from the proposed solar generation facility. Although no direct effects would occur as a result of the proposed project, we have considered the indirect visual effects of the undertakings on the Trail. The attached photos simulate what the facility would look like before and after construction. As the photos illustrate, the visual effects from the perspective at the Trail would be minimal. We judge that the proposed undertakings would not alter any characteristics of the Trail that make it eligible for the National Register.

An alternative route segment (26CK3848) of the Trail crosses through the APE, particularly along the proposed 500 kV transmission line that would run from the solar generation facility to the Crystal Substation. As part of a previous consultation process concluded with your office for another project, this segment was determined not to be a contributing element to the Trail. Four other previously recorded ineligible sites were reported to be within or near the APE. These were described as small artifact scatters, none of which the investigators for the present undertaking were able to relocate.

The historic San Pedro, Los Angeles, and Salt Lake City Railroad (26CK5685), now operated as the Union Pacific and Southern Pacific Railroad, runs along the southeast portion of the solar facility. The historical significance of the railroad is associated principally with early development of Las Vegas and the West. The railroad grade is fully modernized. The proposed undertakings would not cause effects to the characteristics that contribute to the eligibility of the railroad for the National Register.

A small artifact scatter, 29Ck9415, was newly recorded in the vicinity of the proposed transmission line. We visited this site on September 20, 2011, in the company of Ms. Rebecca Palmer, Deputy State Historic Preservation Officer. The author of the inventory report recommends this site as ineligible for the National Register and both the BIA and BLM agree with this determination. Even though this site is considered ineligible to the National Register of Historic Places, the proposed transmission line alignment and access road would avoid the site in its entirety. We have agreed that protective measures such as barricading the site perimeter would be employed during construction. We are asking for your concurrence in our determination of 29Ck9415 as an ineligible property.

By letters dated May 2011, the BIA approached eight Tribes in the region inquiring if there were any concerns about the effects of the proposed project on historic properties or areas of traditional or cultural importance. These Tribes include Las Vegas Paiute Tribe, Kaibab Band of Paiute Indians, Hualapai Indian Tribe, Fort Mojave Indian Tribe, Hopi Tribe, Colorado River Indian Tribes, Chemehuevi Indian Tribe, and Paiute Indian Tribe of Utah. The Hopi tribe responded that it would be interested in further consultation if the proposed project would potentially have an adverse effect on prehistoric Ancestral Puebloan sites.

By letter dated July 2011, we contacted various officers of the Old Spanish Trail Association inquiring about any concerns that organization might have about project effects. Our correspondence and a follow-up telephone call to the listed contact for the Nevada Chapter of the association did not prompt any concerns about the project.

Our determination of no effect to historic properties will be included as part of the Environmental Impact Statement documentation being prepared for the proposed undertakings. As part of the National Environmental Policy Act (NEPA) review process, we are employing corresponding federal and tribal notification procedures for addressing our responsibilities as defined at 36 CFR 800.2(d).

As required at 36 CFR 800.5 (c), we are submitting documentation of this finding and await your response within thirty days of receipt. We trust you will agree with this finding and seek your concurrence that the Section 106 consultation process has been successfully completed for the subject undertakings. If there are any questions, please contact Mr. Garry J. Cantley, Regional Archeologist, at (602) 379-6750 extension 1256.

Sincerely,

Catherine Wilson

ACTING Deputy Regional Director - Trust Services

Enclosures

cc: Superintendent, Southern Paiute Agency (w/enc)
Attn: Environmental Coordinator
Chairman, Moapa Business Council (w/enc)
Chairperson, Moapa Cultural Committee (w/enc)
Field Manager, Las Vegas Field Office, BLM (w/enc)
Regional Realty Officer, WRO

This page intended to be blank.

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 North Central Avenue
Phoenix, Arizona 85004-3008

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
Environmental Quality Services

MAY 09 2011

Mr. Ronald M. James
State Historic Preservation Officer
Department of Cultural Affairs
Nevada State Historic Preservation Office
100 North Stewart Street
Carson City, Nevada 89701

Dear Mr. James:

This letter and the enclosures constitute initiation of the process prescribed by Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), and codified at 36 CFR 800. As Lead Agency Official at 36 CFR 800.2(a)(2), we have determined that the proposed project constitutes a federal undertaking: **approval of a lease for the Moapa Band of Paiute Indians Solar Generation Facility, Clark County, and grants of easement for an associated water line and transmission line (Project No. 2010-231).** As noted in the enclosed Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS), the undertaking can be characterized as a solar photovoltaic electricity generating facility to be built in stages, with eventual capability to produce up to 350MW. The proposed undertaking will further require right-of-way approval by the Bureau of Land Management (BLM) for an associated transmission line and access road to connect with the Crystal Substation.

Pursuant to 36 CFR 800.3, we wish to initiate the consultation process for the undertaking with the Nevada State Historic Preservation Office (SHPO). We are writing to request your views and consult regarding the following prescribed steps:

Involving the public pursuant to 36 CFR 800.3(e): We plan to involve the public while developing the EIS under the National Environmental Policy Act (NEPA). As part of the NEPA review process, we will employ BIA, BLM, and Tribal notification procedures for addressing our responsibilities as defined at 36 CFR 800.2(d).

Identifying other consulting parties pursuant to 36 CFR 800.3(f): The consulting parties identified to date for this undertaking include the Moapa Band of Paiute Indians as identified at 36 CFR 800.3(d) and the BLM, Las Vegas Field Office. Pursuant to 36 CFR 800.2(c)(2)(ii), we presently are approaching Tribes in the region that may attach religious and cultural significance to historic properties that may be affected by the undertaking.

Determining the area of potential effects (APE) pursuant to 36 CFR 800.4(a)(1): We presently consider the APE to include approximately 2,000 contiguous acres for the solar energy facility lease; a 0.6 mile long water line to the project area from an existing water line; and the alignment for the transmission line connecting the solar facility to the nearby Crystal Substation.

Any additional efforts that may be necessary to identify historic properties in the APE pursuant to 36 CFR 800.4(b): As we follow subsequent steps in the consultation process, we will submit an archeological survey report for your review that covers the APE in its entirety, including the proposed lease area, transmission line alignment, and any other associated facilities. We note that an ethnographic study conducted for a previously proposed project encompassed by the present project area revealed no traditional cultural properties.

We look forward to your views on these steps and additional efforts we may employ to satisfy our responsibilities as prescribed by the NHPA. If there are any questions, please contact Mr. Garry J. Cantley, Regional Archeologist, at (602) 379-6750 extension 1256.

Sincerely,

/s/ Rodney McVey

Deputy Regional Director - Trust Services

Enclosures

cc: Superintendent, Southern Paiute Agency (w/enc)
Attn: Environmental Coordinator
Chairman, Moapa Business Council (w/enc)
Chairperson, Moapa Cultural Committee (w/enc)
Field Manager, Las Vegas Field Office, BLM (w/enc)
Regional Realty Officer, WRO (w/enc)

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 North Central Avenue
Phoenix, Arizona 85004-3008

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
Environmental Quality Services

MAY 09 2011

Honorable Lucille Campa
Chairperson, Las Vegas Tribal Council
Number One Paiute Drive
Las Vegas, Nevada 89106

Dear Chairperson Campa:

As Agency Official for purposes of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), the Western Regional Office of the Bureau of Indian Affairs (BIA) wishes to consult with the Las Vegas Paiute Tribe (LVPT) about the proposed project, **approval of a lease for the Moapa Band of Paiute Indians Solar Generation Facility, Clark County, Nevada and grants of easement for an associated water line and transmission line (Project No. 2010-231)**. As noted in the enclosed Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS), the undertaking can be characterized as a solar photovoltaic electricity generating facility to be built in stages, with eventual capability to produce up to 350MW. The proposed undertaking will further require right-of-way approval by the Bureau of Land Management (BLM) for an associated transmission line and access road to connect with the Crystal Substation.

The BIA is serving as Lead Federal Agency as described at 36 CFR 800.2(a)(2) for the project. Consulting parties identified to date for this undertaking include the Moapa Band of Paiute Indians and the BLM, Las Vegas Field Office. A cultural resource inventory report will be prepared for the proposed area of potential effects (APE) in its entirety. We note that an ethnographic study conducted for a previously proposed project encompassed by the present project area revealed no traditional cultural properties.

Following provisions of the NHPA, we are seeking counsel with your office regarding the proposed undertaking to identify any concerns about historic properties; advise on our identification efforts and evaluation of historic properties; articulate views on the undertaking's effects; and participate in the resolution of any adverse effects. We specifically are asking to be advised if the LVPT attaches religious and cultural significance to any historic properties in the APE.

We look forward to your views on this project and other efforts we may employ to satisfy our responsibilities as prescribed by the NHPA.

If there are any questions, please contact Mr. Garry J. Cantley, Regional Archeologist, at (602) 379-6750 extension 1256.

Sincerely,

/s/ Rodney McVey

Deputy Regional Director-Trust Services

Enclosures

cc: Superintendent, Southern Paiute Agency
Attn: Environmental Coordinator
Chairman, Moapa Business Council
Chairperson, Moapa Cultural Committee
Field Manager, Las Vegas Field Office, BLM
Regional Realty Officer, WRO
Manager, Environmental Programs, LVPT (w/enc)

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 North Central Avenue
Phoenix, Arizona 85004-3008

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
Environmental Quality Services

MAY 09 2011

Honorable Manuel Savala
Chairman, Kaibab Paiute Tribal Council
HC65 Box 2, 1st N. Pipe Springs Road
Fredonia, Arizona 86022

Dear Chairman Savala:

As Agency Official for purposes of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), the Western Regional Office of the Bureau of Indian Affairs (BIA) wishes to consult with the Kaibab Band of Paiute Indians about the proposed project, **approval of a lease for the Moapa Band of Paiute Indians Solar Generation Facility, Clark County, Nevada and grants of easement for an associated water line and transmission line (Project No. 2010-231)**. As noted in the enclosed Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS), the undertaking can be characterized as a solar photovoltaic electricity generating facility to be built in stages, with eventual capability to produce up to 350MW. The proposed undertaking will further require right-of-way approval by the Bureau of Land Management (BLM) for an associated transmission line and access road to connect with the Crystal Substation.

The BIA is serving as Lead Federal Agency as described at 36 CFR 800.2(a)(2) for the project. Consulting parties identified to date for this undertaking include the Moapa Band of Paiute Indians and the BLM, Las Vegas Field Office. A cultural resource inventory report will be prepared for the proposed APE in its entirety. We note that an ethnographic study conducted for a previously proposed project encompassed by the present project area revealed no traditional cultural properties.

Following provisions of the NHPA, we are seeking counsel with your office regarding the proposed undertaking to identify any concerns about historic properties; advise on our identification efforts and evaluation of historic properties; articulate views on the undertaking's effects; and participate in the resolution of any adverse effects. We specifically are asking to be advised if the Kaibab Band of Paiute Indians attaches religious and cultural significance to any historic properties in the APE.

We look forward to your views on this project and other efforts we may employ to satisfy our responsibilities as prescribed by the NHPA.

If there are any questions, please contact Mr. Garry J. Cantley, Regional Archeologist, at (602) 379-6750 extension 1256.

Sincerely,

/s/ Rodney McVey

Deputy Regional Director-Trust Services

Enclosures

cc: Superintendent, Southern Paiute Agency
Attn: Environmental Coordinator
Chairman, Moapa Business Council
Chairperson, Moapa Cultural Committee
Field Manager, Las Vegas Field Office, BLM
Cultural Resource Director, Kaibab (w/enc)

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 North Central Avenue
Phoenix, Arizona 85004-3008

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
Environmental Quality Services

MAY 09 2011

Honorable Richard Walema, Sr.
Vice-Chairman, Hualapai Tribal Council
P.O. Box 179
Peach Springs, Arizona 86434

Dear Vice-Chairman Walema:

As Agency Official for purposes of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), the Western Regional Office of the Bureau of Indian Affairs (BIA) wishes to consult with the Hualapai Indian Tribe about the proposed project, **approval of a lease for the Moapa Band of Paiute Indians Solar Generation Facility, Clark County, Nevada and grants of easement for an associated water line and transmission line (Project No. 2010-231).** As noted in the enclosed Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS), the undertaking can be characterized as a solar photovoltaic electricity generating facility to be built in stages, with eventual capability to produce up to 350MW. The proposed undertaking will further require right-of-way approval by the Bureau of Land Management (BLM) for an associated transmission line and access road to connect with the Crystal Substation.

The BIA is serving as Lead Federal Agency as described at 36 CFR 800.2(a)(2) for the project. Consulting parties identified to date for this undertaking include the Moapa Band of Paiute Indians and the BLM, Las Vegas Field Office. A cultural resource inventory report will be prepared for the proposed area of potential effects (APE) in its entirety. We note that an ethnographic study conducted for a previously proposed project encompassed by the present project area revealed no traditional cultural properties.

Following provisions of the NHPA, we are seeking counsel with your office regarding the proposed undertaking to identify any concerns about historic properties; advise on our identification efforts and evaluation of historic properties; articulate views on the undertaking's effects; and participate in the resolution of any adverse effects. We specifically are asking to be advised if the Hualapai Indian Tribe attaches religious and cultural significance to any historic properties in the APE.

We look forward to your views on this project and other efforts we may employ to satisfy our responsibilities as prescribed by the NHPA.

If there are any questions, please contact Mr. Garry J. Cantley, Regional Archeologist, at (602) 379-6750 extension 1256.

Sincerely,

/s/ Rodney McVey

Deputy Regional Director-Trust Services

Enclosures

cc: Superintendent, Southern Paiute Agency
Attn: Environmental Coordinator
Superintendent, Truxton Canon Agency (w/enc)
Chairman, Moapa Business Council
Chairperson, Moapa Cultural Committee
Field Manager, Las Vegas Field Office, BLM
Tribal Historic Preservation Officer, Hualapai Indian Tribe (w/enc)

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 North Central Avenue
Phoenix, Arizona 85004-3008

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
Environmental Quality Services

MAY 09 2011

Honorable Timothy Williams
Chairman, Fort Mojave Tribal Council
500 Merriman Avenue
Needles, California 92363

Dear Chairman Williams:

As Agency Official for purposes of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), the Western Regional Office of the Bureau of Indian Affairs (BIA) wishes to consult with the Fort Mojave Indian Tribe (FMIT) about the proposed project, **approval of a lease for the Moapa Band of Paiute Indians Solar Generation Facility, Clark County, Nevada and grants of easement for an associated water line and transmission line (Project No. 2010-231).** As noted in the enclosed Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS), the undertaking can be characterized as a solar photovoltaic electricity generating facility to be built in stages, with eventual capability to produce up to 350MW. The proposed undertaking will further require right-of-way approval by the Bureau of Land Management (BLM) for an associated transmission line and access road to connect with the Crystal Substation.

The BIA is serving as Lead Federal Agency as described at 36 CFR 800.2(a)(2) for the project. Consulting parties identified to date for this undertaking include the Moapa Band of Paiute Indians and the BLM, Las Vegas Field Office. A cultural resource inventory report will be prepared for the proposed area of potential effects (APE) in its entirety. We note that an ethnographic study conducted for a previously proposed project encompassed by the present project area revealed no traditional cultural properties.

Following provisions of the NHPA, we are seeking counsel with your office regarding the proposed undertaking to identify any concerns about historic properties; advise on our identification efforts and evaluation of historic properties; articulate views on the undertaking's effects; and participate in the resolution of any adverse effects. We specifically are asking to be advised if the FMIT attaches religious and cultural significance to any historic properties in the APE.

We look forward to your views on this project and other efforts we may employ to satisfy our responsibilities as prescribed by the NHPA.

If there are any questions, please contact Mr. Garry J. Cantley, Regional Archeologist, at (602) 379-6750 extension 1256.

Sincerely,

/s/ Rodney McVey

Deputy Regional Director-Trust Services

Enclosures

cc: Superintendent, Southern Paiute Agency
Attn: Environmental Coordinator
Superintendent, Colorado River Agency (w/enc)
Chairman, Moapa Business Council
Chairperson, Moapa Cultural Committee
Field Manager, Las Vegas Field Office, BLM
Director, Aha Makav Cultural Society, FMIT (w/enc)

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 North Central Avenue
Phoenix, Arizona 85004-3008

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
Environmental Quality Services

MAY 09 2011

Honorable Leroy N. Shingoitewa
Chairman, Hopi Tribal Council
P.O. Box 123
Kykotsmovi, Arizona 86039

Dear Chairman Shingoitewa:

As Agency Official for purposes of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), the Western Regional Office of the Bureau of Indian Affairs (BIA) wishes to consult with the Hopi Tribe about the proposed project, **approval of a lease for the Moapa Band of Paiute Indians Solar Generation Facility, Clark County, Nevada and grants of easement for an associated water line and transmission line (Project No. 2010-231)**. As noted in the enclosed Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS), the undertaking can be characterized as a solar photovoltaic electricity generating facility to be built in stages, with eventual capability to produce up to 350MW. The proposed undertaking will further require right-of-way approval by the Bureau of Land Management (BLM) for an associated transmission line and access road to connect with the Crystal Substation.

The BIA is serving as Lead Federal Agency as described at 36 CFR 800.2(a)(2) for the project. Consulting parties identified to date for this undertaking include the Moapa Band of Paiute Indians and the BLM, Las Vegas Field Office. A cultural resource inventory report will be prepared for the proposed area of potential effects (APE) in its entirety. We note that an ethnographic study conducted for a previously proposed project encompassed by the present project area revealed no traditional cultural properties.

Following provisions of the NHPA, we are seeking counsel with your office regarding the proposed undertaking to identify any concerns about historic properties; advise on our identification efforts and evaluation of historic properties; articulate views on the undertaking's effects; and participate in the resolution of any adverse effects. We specifically are asking to be advised if the Hopi Tribe attaches religious and cultural significance to any historic properties in the APE.

We look forward to your views on this project and other efforts we may employ to satisfy our responsibilities as prescribed by the NHPA.

If there are any questions, please contact Mr. Garry J. Cantley, Regional Archeologist, at (602) 379-6750 extension 1256.

Sincerely,

/s/ Rodney McVey

Deputy Regional Director-Trust Services

Enclosures

cc: Superintendent, Southern Paiute Agency
Attn: Environmental Coordinator
Superintendent, Hopi Agency (w/enclosures)
Chairman, Moapa Business Council
Chairperson, Moapa Cultural Committee
Field Manager, Las Vegas Field Office, BLM
Regional Realty Officer, WRO
Director, Cultural Preservation Office, Hopi Tribe (w/enc)

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 North Central Avenue
Phoenix, Arizona 85004-3008

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
Environmental Quality Services

MAY 09 2011

Honorable Eldred Enas
Chairman, Colorado River Indian Tribes
26600 Mohave Road
Parker, Arizona 85344-7737

Dear Chairman Enas:

As Agency Official for purposes of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), the Western Regional Office of the Bureau of Indian Affairs (BIA) wishes to consult with the Colorado River Indian Tribes (CRIT) about the proposed project, **approval of a lease for the Moapa Band of Paiute Indians Solar Generation Facility, Clark County, Nevada and grants of easement for an associated water line and transmission line (Project No. 2010-231)**. As noted in the enclosed Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS), the undertaking can be characterized as a solar photovoltaic electricity generating facility to be built in stages, with eventual capability to produce up to 350MW. The proposed undertaking will encumber approximately 2,000 contiguous acres and will further require right-of-way approval by the Bureau of Land Management (BLM) for an associated transmission line and access road to connect with the Crystal Substation.

The BIA is serving as Lead Federal Agency as described at 36 CFR 800.2(a)(2) for the project. Consulting parties identified to date for this undertaking include the Moapa Band of Paiute Indians and the BLM, Las Vegas Field Office. A cultural resource inventory report will be prepared for the proposed area of potential effects (APE) in its entirety. We note that an ethnographic study conducted for a previously proposed project encompassed by the present project area revealed no traditional cultural properties.

Following provisions of the NHPA, we are seeking counsel with your office regarding the proposed undertaking to identify any concerns about historic properties; advise on our identification efforts and evaluation of historic properties; articulate views on the undertaking's effects; and participate in the resolution of any adverse effects. We specifically are asking to be advised if the CRIT attaches religious and cultural significance to any historic properties in the APE.

We look forward to your views on this project and other efforts we may employ to satisfy our responsibilities as prescribed by the NHPA.

If there are any questions, please contact Mr. Garry J. Cantley, Regional Archeologist, at (602) 379-6750 extension 1256.

Sincerely,

/s/ Rodney McVey

Deputy Regional Director-Trust Services

Enclosures

cc: Superintendent, Southern Paiute Agency
Attn: Environmental Coordinator
Superintendent, Colorado River Agency
Chairman, Moapa Business Council
Chairperson, Moapa Cultural Committee
Field Manager, Las Vegas Field Office, BLM
Director, CRIT Museum (w/enc)

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 North Central Avenue
Phoenix, Arizona 85004-3008

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
Environmental Quality Services

MAY 09 2011

Honorable Charles Wood
Chairman, Chemehuevi Tribal Council
P.O. Box 1976
Havasu Lake, California 92362

Dear Chairman Wood:

As Agency Official for purposes of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), the Western Regional Office of the Bureau of Indian Affairs (BIA) wishes to consult with the Chemehuevi Indian Tribe (CIT) about the proposed project, **approval of a lease for the Moapa Band of Paiute Indians Solar Generation Facility, Clark County, Nevada and grants of easement for an associated water line and transmission line (Project No. 2010-231)**. As noted in the enclosed Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS), the undertaking can be characterized as a solar photovoltaic electricity generating facility to be built in stages, with eventual capability to produce up to 350MW. The proposed undertaking will encumber approximately 2,000 contiguous acres and will further require right-of-way approval by the Bureau of Land Management (BLM) for an associated transmission line and access road to connect with the Crystal Substation.

The BIA is serving as Lead Federal Agency as described at 36 CFR 800.2(a)(2) for the project. Consulting parties identified to date for this undertaking include the Moapa Band of Paiute Indians and the BLM, Las Vegas Field Office. A cultural resource inventory report will be prepared for the proposed area of potential effects (APE) in its entirety. We note that an ethnographic study conducted for a previously proposed project encompassed by the present project area revealed no traditional cultural properties.

Following provisions of the NHPA, we are seeking counsel with your office regarding the proposed undertaking to identify any concerns about historic properties; advise on our identification efforts and evaluation of historic properties; articulate views on the undertaking's effects; and participate in the resolution of any adverse effects. We specifically are asking to be advised if the Chemehuevi Indian Tribe attaches religious and cultural significance to any historic properties in the APE.

We look forward to your views on this project and other efforts we may employ to satisfy our responsibilities as prescribed by the NHPA.

If there are any questions, please contact Mr. Garry J. Cantley, Regional Archeologist, at (602) 379-6750 extension 1256.

Sincerely,

/s/ Rodney McVey

Deputy Regional Director-Trust Services

Enclosures

cc: Superintendent, Southern Paiute Agency
Attn: Environmental Coordinator
Superintendent, Colorado River Agency
Chairman, Moapa Business Council
Chairperson, Moapa Cultural Committee
Field Manager, Las Vegas Field Office, BLM
Director of Cultural Resources, CIT (w/enc)

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 North Central Avenue
Phoenix, Arizona 85004-3008

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
Environmental Quality Services

MAY 09 2011

Honorable Jeanine Borchardt
Chairperson, Paiute Indian Tribe of Utah Tribal Council
440 North Paiute Drive
Cedar City, Utah 84720-2613

Dear Chairperson Borchardt:

As Agency Official for purposes of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), the Western Regional Office of the Bureau of Indian Affairs (BIA) wishes to consult with the Paiute Indian Tribe of Utah (PITU) about the proposed project, **approval of a lease for the Moapa Band of Paiute Indians Solar Generation Facility, Clark County, Nevada and grants of easement for an associated water line and transmission line (Project No. 2010-231).** As noted in the enclosed Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS), the undertaking can be characterized as a solar photovoltaic electricity generating facility to be built in stages, with eventual capability to produce up to 350MW. The proposed undertaking will further require right-of-way approval by the Bureau of Land Management (BLM) for an associated transmission line and access road to connect with the Crystal Substation.

The BIA is serving as Lead Federal Agency as described at 36 CFR 800.2(a)(2) for the project. Consulting parties identified to date for this undertaking include the Moapa Band of Paiute Indians and the BLM, Las Vegas Field Office. A cultural resource inventory report will be prepared for the proposed area of potential effect (APE) in its entirety. We note that an ethnographic study conducted for a previously proposed project encompassed by the present project area revealed no traditional cultural properties.

Following provisions of the NHPA, we are seeking counsel with your office regarding the proposed undertaking to identify any concerns about historic properties; advise on our identification efforts and evaluation of historic properties; articulate views on the undertaking's effects; and participate in the resolution of any adverse effects. We specifically are asking to be advised if the PITU attaches religious and cultural significance to any historic properties in the APE.

We look forward to your views on this project and other efforts we may employ to satisfy our responsibilities as prescribed by the NHPA.

If there are any questions, please contact Mr. Garry J. Cantley, Regional Archeologist, at (602) 379-6750 extension 1256.

Sincerely,

/s/ Rodney McVey

Deputy Regional Director-Trust Services

Enclosures

cc: Superintendent, Southern Paiute Agency
Attn: Environmental Coordinator
Chairman, Moapa Business Council
Chairperson, Moapa Cultural Committee
Field Manager, Las Vegas Field Office, BLM
Cultural Resource Director, PITU (w/enc)

THE HOPI TRIBE

COPY

400R
420
420E
AA

LeRoy N. Shingoitewa
CHAIRMAN

Herman G. Honanie
VICE-CHAIRMAN

May 23, 2011

Rodney McVey, Deputy Regional Director – Trust Services
Attention: Gary Cantley, Regional Archaeologist
Bureau of Indian Affairs, Western Regional Office
2600 North Central Avenue
Phoenix, Arizona 85004-3008

Dear Mr. Mcvey,

This letter is in response to your correspondences dated May 9, 2011, regarding approval of a lease for the Moapa Band of Paiute Indians Solar Generation Facility, Clark County, Nevada and grants of easement for an associated water line and transmission line (Project No. 2010-231). The Hopi Tribe claims cultural affiliation to Ancestral Puebloan cultural groups in southern Nevada. The Hopi Cultural Preservation Office supports the identification and avoidance of prehistoric archaeological sites, and we consider the prehistoric archaeological sites of our ancestors to be "footprints" and Traditional Cultural Properties. Therefore, we appreciate the Bureau of Indian Affairs' solicitation of our input and your efforts to address our concerns.

And therefore, the Hopi Cultural Preservation Office is interested in consulting on this proposal if it has the potential to adversely affect prehistoric Ancestral Puebloan sites. Because this is a project that involves ground disturbing activities that must comply with the National Historic Preservation Act, we look forward to receiving a copy of the cultural resources survey of the area of potential effect for review and comment. If Ancestral Puebloan cultural resources are identified and will be adversely affected by project activities, we will request further consultation on this proposal, including being provided with a copy of any proposed treatment plans for review and comment.

If you have any questions or need additional information, please contact Terry Morgart at 928-734-3619 or tmorgart@hopi.nsn. Thank you for your consideration.

Respectfully,

Leigh J. Kuwanwisiwma, Director
Hopi Cultural Preservation Office

MAY 2011
WESTERN REGIONAL OFC
ENVIRONMENTAL
SERVICES

This page intended to be blank.

STATE OF NEVADA
DEPARTMENT OF CULTURAL AFFAIRS
State Historic Preservation Office
100 N. Stewart Street
Carson City, Nevada 89701
(775) 684-3448 • Fax (775) 684-3442
www.nvshpo.org

MICHAEL E. FISCHER
Department Director

RONALD M. JAMES
State Historic Preservation Officer

June 14, 2011

Deputy Regional Director
Trust Services
Bureau of Indian Affairs
Western Regional Office
2600 North Central Avenue
Phoenix AZ 85004-3008

RE: Approval of a Lease for the Moapa Band of Paiute Indians Solar Generation Facility, Clark County (Project No. 2010-231) (Undertaking #2011-1607).

Dear Deputy Regional Director:

The Nevada State Historic Preservation Office (SHPO) initiated its review of the subject undertaking. The SHPO reviewed the Bureau of Indian Affairs' determination of the area of potential effect (APE) for the subject undertaking. The SHPO recommends that the Bureau of Indian Affairs consider expanding the APE to take into consideration the visual effect of the undertaking on historic properties for which the setting and feeling are aspects of the property's integrity. In other undertakings with a similar visual impact, the identification of these resources that might be eligible for the National Register of Historic Places has required a literature search and a review of the historic archival record.

The SHPO would concur with a Bureau of Indian Affairs determination that the identification of consulting parties and interested members of the public has been adequate if the list were to include representatives of the Old Spanish Trail Association.

We look forward to working with the Bureau of Indian Affairs to ensure a successful project.

If you have any questions concerning this correspondence, please feel free to contact me at (775) 684-3443 or by e-mail at Rebecca.Palmer@nevadaculture.org.

Sincerely,

Rebecca Lynn Palmer, Deputy
State Historic Preservation Officer

This page intended to be blank.

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 North Central Avenue
Phoenix, Arizona 85004

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
Division of Environmental, Cultural and Safety

JUL 0 8 2011

Ms. Reba Wells Grandrud
President, Old Spanish Trail Association Board
2322 East Cholla Street
Phoenix, Arizona 85028-1709

Dear Ms. Grandrud:

As Agency Official for purposes of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), the Western Regional Office of the Bureau of Indian Affairs (BIA) wishes to consult with the Old Spanish Trail Association (OSTA) about the proposed project, **approval of a lease for the Moapa Band of Paiute Indians Solar Generation Facility, Clark County, Nevada and grants of easement for an associated water line and transmission line (Project No. 2010-231)**. As noted in the enclosed Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS), the undertaking is characterized as a solar photovoltaic electricity generating facility: it will be constructed in stages, with eventual capability to produce up to 350MW. The proposed undertaking will encumber approximately 2,000 contiguous acres on the Moapa River Indian Reservation. It will further require right-of-way approval by the Bureau of Land Management (BLM) for an associated transmission line and access road on BLM lands to connect with the Crystal Substation.

The BIA is serving as Lead Federal Agency as described at 36 CFR 800.2(a)(2) for the project. Consulting parties identified to date for this undertaking include the Moapa Band of Paiute Indians and the Southern Nevada District Office of the BLM. A cultural resource inventory report will be prepared for the proposed area of potential effects (APE) in its entirety.

Following provisions of the NHPA, we are seeking counsel with your office regarding the proposed undertaking to identify any concerns about historic properties; advise on our identification efforts and evaluation of historic properties; articulate views on the undertaking's effects; and participate in the resolution of any adverse effects. We specifically are asking to be advised if the OSTA has any concerns about the effects of the project on the Old Spanish Trail Corridor (OSTC).

The National Park Service (NPS) has defined that part of the OSTC near the project area as following along California Wash. Although no physical trace of the OSTC has been observed in this area, at its nearest point it would lie approximately one mile to the east across Interstate 15 from the proposed project. A later OST wagon route/Mormon Trail is located to the west of the project area, but this segment has previously been determined to be a non-contributing segment of the OST.

We look forward to your views on this project and other efforts we may employ to satisfy our responsibilities as prescribed by the NHPA. If there are any questions, please contact Mr. Garry J. Cantley, Regional Archeologist, at (602) 379-6750 extension 1256.

Sincerely,

/s/Catherine Wilson

ACTING Deputy Regional Director – Trust Services

Enclosure

cc: Superintendent, Southern Paiute Agency
Attn: Environmental Coordinator
Chairman, Moapa Business Council
Chairperson, Moapa Cultural Committee
Manager, Southern Nevada District Office, BLM
Association Manager, OSTA (w/enclosures)
Nevada Chapter, OSTA (w/enclosures)

Appendix H

Visual Contrast Rating Worksheets

This page intended to be blank.

Form 8400-4

PANORAMIC NO-MID-GROUND

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: September 21, 2011 M. CHANDLER
District/ Field Office: Southern Nevada
Resource Area: Las Vegas
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name K Road Power
2. Key Observation Point #3
3. VRM Class 4
4. Location Township_____ Range_____ Section_____
5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION NO MID OR BACK

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG ROLLING HILLS/MESA FLAT GRADUAL SLOPE MG BG DOMED Hills	FG: SIMPLE LOW PATCH BG: NOT VISIBLE	FG: TELINE & HWY TERR LONG CONTRAST T RAILROAD LINE
LINE	FG: FLAT, ANGULA DECHA GULLIES BG ANG LINE IN MTN. CONCAVE	FG: WEAK/IRREG JAGGED BG: NOT VIS	FG TELINE SMOOTH FLAT NR. DIVERSIONS HWY STRAIT CONT
COLOR	FG: TANS AND PINKS & WHITE BG: REDS, DK REDS & BLK	FG: OLIVE GRN TO GRY GRN BG: NOT VISIBLE	FG HWY SILVER GRAY TEL DRAB TO BLK RR DRK GRY
TEXTURE	FG: FLOWING SMOOTH BG: COARSE, JAGGED	FG: FINE AND PATCHY DISCONTINUES BG NOT VIS	FG FINE UNIFORM TELINE DIRECTION W/ HWY, RR MED-COARSE HWY MATTE

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEXTURE			

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
ELEMENTS	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
FORM												
LINE												
COLOR												
JRF												

2. Does project design meet visual resource management objectives? __Yes __No (Explain on reverses side)

3. Additional mitigating measures recommended __Yes __No (Explain on reverses side)

Evaluator's Names M. Chandler, K. Sprowl, and C. Martin — Date

Form 8400-4

A.S. Baytaryan

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: September 21, 2011
District/ Field Office: Southern Nevada
Resource Area: Las Vegas
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name K Road Power	4. Location Township_____	5. Location Sketch
2. Key Observation Point 4	Range_____	
3. VRM Class Class IV	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG - level, gentle bumps/hills MG - Rolling, sloping hills BG - Jagged and smooth Ranges.	FG - dotted, scattered, horizontal MG - indistinct BG - indistinct	FG - telephone line, train tracks, fence, billboard MG - N/A BG - N/A
LINE	FG - Straight MG - hills sloping/rolling N-S BG - uneven, concaved (cave)	FG - horizontal, continuous MG - sloping (on hill) BG - indistinct	FG Horizontal, vertical elements, additional MG - N/A BG - N/A
COLOR	FG - tan, light red MG - brown, some black BG - dark gray, blue haze	FG - green gray, tan/yellow (grass) MG - brown/gray BG - indistinct	FG - gray, black, varies (back of cars of train, brown fence) MG - N/A BG - N/A
TEXTURE	FG - smooth, subtle MG - coarse BG - Rugged, jagged and smooth Ranges	FG - dotted, continuous MG - indistinct BG - indistinct	FG - linear towers, fence, additional MG - N/A tracks/continuous fence/towers. BG - N/A

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEXTURE			

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? ___Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
M. Chandler, K. Sprowl, and C. Martin

Form 8400-4

A.S. Vaytaryan

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: September 21, 2011

District/ Field Office: Southern Nevada

Resource Area: Las Vegas

Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name K Road Power	4. Location Township_____	5. Location Sketch
2. Key Observation Point	Range_____	
3. VRM Class Class IV	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG- rolling mesa, level top BG- concaved, uneven	FG- sloping - S/SE, scattered BG- indistinct	FG- powerline, wooden Rail line BG- N/A
LINE	FG- straight, not sloping BG- uneven, rugged	FG- scattered, repeated BG- indistinct	FG- linear, continuous vehicle demands BG- N/A
COLOR	FG- light red/brown, tan BG- light brown, blue haze	FG- Green, dark tan BG- scattered black	FG- dark brown, gray - black BG- N/A
TEX-TURE	FG- coarse, vegetated BG- indistinct	FG- uniform BG- indistinct	FG- uniform, geometrical towers on Rail line BG- N/A

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEX-TURE			

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? ___Yes ___No
(Explain on reverses side)

3. Additional mitigating measures recommended
___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
M. Chandler, K. Sprowl, and C. Martin

Form 8400-4

A S. Poytaryan

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: September 21, 2011
District/ Field Office: Southern Nevada
Resource Area: Las Vegas
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name K Road Power	4. Location Township_____	5. Location Sketch
2. Key Observation Point 5 - old spanish trail	Range_____	
3. VRM Class Class III, looking into class IV	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG - level ground sloping up, towards left MG - Mesa, are hill BG - Rugged, uneven hills	FG - Scattered horizontal, dotted MG - flat, horizontal BG - indistinct	FG - train tracks, train cars going MG - highway and powerline towers, travel plaza BG - N/A
LINE	FG - straight, not sloping MG - sloping down from mesa-hill BG - uneven	FG - straight, horizontal MG straight, sloping (in some) BG - indistinct	FG - horizontal, straight MG - straight, vertical towers BG - N/A
COLOR	FG - tan, gray MG - light red, tan, green here BG - dark gray, brown	FG - green, gray, tan MG - light tan, green BG - brown	FG - gray, black (only visible when going through) MG - black, gray, white (cracks in vehicles) BG - N/A
TEX-TURE	FG - coarse, vegetated MG - vegetated, mesa, hilly BG - Indistinct	FG - dotted, continuous (from distance) MG - uniform, scattered BG - Indistinct	FG - uniform MG - uniform, linear towers scattered BG - N/A

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEX-TURE			

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? ___Yes ___No
(Explain on reverses side)

3. Additional mitigating measures recommended
___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
M. Chandler, K. Sprowl, and C. Martin

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: September 21, 2011 K. Sprowl
District/ Field Office: Southern Nevada
Resource Area: Las Vegas
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name K Road Power
2. Key Observation Point Site #5
3. VRM Class in class III, looking into C, IV
4. Location Township_____ Range_____ Section_____
5. Location Sketch Cultural KOP for OST

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG - flat, even mg - flat linear, even mesa ridge BG - inward, diagonal lines gradual far	FG - prominent + smooth mg - level on mesa, patchy on far BG not visible	FG - 2 track rd, RR only up train mg - large vehicles on hwy, semis + bldgs at trans plaza BG - none
LINE	FG - regular, level mg - gentle slope + level mesa BG - bold diagonal + vert. lines	FG - regular, uniform mg - uniform on mesa, broken on far BG - not visible	FG - Straight to curvy, weak mg - isolated vert, tank, blocky bldgs + trans + semis BG - none
COLOR	FG - yellow, grey tan mg - white + tan BG - light + dark brown + black	FG - olive green, grey mg - dark olive green BG - undistinct	FG - non-visible mg - side bldgs, white tanks + billboards BG - N/A
TEX-TURE	FG - smooth, continuous mg - gradient from mesa to far BG - coarse, diag + vertical stripes	FG - fine, uniform, dense mg - even on mesa, patchy on far BG - not visible	FG - fine mg - medium smooth BG - course, striped

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEX-TURE			

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? __Yes __No (Explain on reverses side)

3. Additional mitigating measures recommended __Yes __No (Explain on reverses side)

Evaluator's Names M. Chandler, K. Sprowl, and C. Martin — Date

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: September 21, 2011 K Sprowl
District/ Field Office: Southern Nevada
Resource Area: Las Vegas
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name K Road Power
2. Key Observation Point Site 4
3. VRM Class Class III
4. Location Township_____ Range_____ Section_____
5. Location Sketch
View NW of project area in distant foreground

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Fg - low rolling hills mg - rolling to angular hills Bg - ragged, pyramidal + smooth	Fg - rolling, patchy + even mg - not visible Bg - not visible	Fg - fenceline, RR track + T poles mg - none Bg - none
LINE	Fg - weak, undulating rocky mg - horizontal irregular Bg - bold, broken, vertical + diag.	Fg - continuous, undulating mg - not visible Bg - not visible	Fg - linear, horizontal + an mg - none Bg - none
COLOR	Fg - tans + reds mg - light to dark brown bg - light brown + black	Fg - dark olive green, grey green mg - not visible Bg - not visible	Fg - dark brown + grey fence mg - dark Brown pad T poles RR Bg - none
TEX-TURE	Fg - Subtle, smooth mg - medium course w/ stripes Bg - Rough, vertical stripes	Fg - patchy, stippled mg - not visible Bg - not visible	Fg - ordered, continuous, uniform mg - none Bg - none

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEX-TURE			

SECTION D. CONTRAST RATING ___SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? ___Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

Evaluator's Names M. Chandler, K. Sprowl, and C. Martin Date

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: September 21, 2011 K. Sprowl
District/ Field Office: Southern Nevada
Resource Area: Las Vegas
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name K Road Power	4. Location Township_____	5. Location Sketch view NE of N side of I-15
2. Key Observation Point Site #3	Range_____	
3. VRM Class class IV	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG- rolling + level mesa top BG- rolling w/ 1 dome	FG- grey green BG- indistinct	FG- linear thru, telephone poles, Railroad bed BG- none
LINE	FG- undulating w/ strong horizontal line on mesa BG- weak undulating ridgeline w/ diagonal contours	FG- broken BG- indistinct	FG- linear, uniform horizontal + vertical BG- none
COLOR	FG- tans + reddish-tans BG- grey-brown	FG- grey-green BG- indistinct due to haze	FG- dark brown poles green on thru wires BG- none
TEXTURE	FG- fine, stippled BG- moderately course	FG- stippled, patchy BG- indistinct	FG- regular-uniform poles BG- none

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEXTURE			

SECTION D. CONTRAST RATING ___SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? ___Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

Evaluator's Names M. Chandler, K. Sprowl, and C. Martin — Date

Form 8400-4

K. Sprowl

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: September 21, 2011
District/ Field Office: Southern Nevada
Resource Area: Las Vegas
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name K Road Power
2. Key Observation Point Site 1
3. VRM Class Class IV
4. Location Township_____ Range_____ Section_____
5. Location Sketch Panoramic landscape

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG - level, gently sloping SE MG - rolling hills + planted hills, gradual fan to North BG - rolling hills w/ domes	FG - Scattered MG - indistinct BG - indistinct	FG - T-lines, Paved + dirt road MG - HAFB bldg w/ 2 stacks, RAILROAD BG - none
LINE	FG - horizontal MG - fans slope outward Dry Lake BG - irregular hills + diagonal	FG - horizontal, occasional vertical MG - indistinct BG - indistinct	FG - Repeating verticals, long oblong MG - long, sinuous BG - none
COLOR	FG - yellowish, gray tan MG - Shades of brown BG - Pale Blue Haze	FG - olive green, grey MG - some olive green + brown BG - indistinct	FG - black T-line, grey bldg MG - black T-lines, tan dirt road BG - none
TEXTURE	FG - smooth, fine MG - fine course hills, smooth fans BG - fine course hills	FG - sparse stipple MG - uniform BG - indistinct	FG - course, uniform BG - smooth gradient by clump MG - repeating towers, linear pattern Railroad BG - none

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEXTURE			

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? ___Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

Evaluator's Names M. Chandler, K. Sprowl, and C. Martin

Date

Form 8400-4

M. CHANDLER

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: September 21, 2011
District/ Field Office: Southern Nevada
Resource Area: Las Vegas
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name K Road Power	4. Location Township_____	5. Location Sketch
2. Key Observation Point 5	Range_____	
3. VRM Class VRM 3 LOOKING INTO 4	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: FLAT, SLOP TO HWY MG: MESA SLOP SOM FEAT BG: JAGGED, COARSE IRREG	FG: FLAT UNIFORM CREOSOTE MG: LARGE BLOCKS, BUT PATCHY BG: NOT VISIBLE	FG OST RR MG MORA TY PLY, IES, COMSITE BG T-LINES
LINE	FG: FLAT AND UNIFORM MG: FLAT MESA W/ ANG TOE SLOPES BG: VERT & UNDULATING LINES	FG: FLAT AND THIN MG: LAYERED BY SLOPES & MESA BG NOT VISIBLE	FG: OST STRAIT AND MG CONTINUOUS RR LINE HOR ACC VERT BG COMTOWER & VERT MT OPEN
COLOR	FG: NOT VISIBLE IN FG - FLAT MG: LIHT-TOTAN SIDE SLOPES BG: GRY BROWNS & BLKS	FG: ORANGE MED GREEN MG YELLOW HUES GREEN GRY TO GREEN BG NOT VISIBLE	FG: DIST TAN MG: VARIES W/ USE HICKS TRACTAL BG: WHT TANK & BLK TURB
TEX-TURE	FG: VERY FINE MG MEDIUM TO SMOOTH BG COARSE	FG: COARSE TO COARSE MG: FINE DISPERSED BG NOT VISIBLE	FG: FINE MG: BLOCKY STRUCTURED VERT T BG: FINE TINES

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEX-TURE			

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? ___Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
M. Chandler, K. Sprowl, and C. Martin

Form 8400-4

PANORAMIC LANDSCAPE

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: September 21, 2011 M CHANDLER
District/ Field Office: Southern Nevada
Resource Area: Las Vegas
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name K Road Power
2. Key Observation Point KOP 1
3. VRM Class 4
4. Location Township_____ Range_____ Section_____
5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: SLOPING SE, FLAT MG: ROLLING BG: SLOPE NORTH DOMED	FG: FLAT, DOTTED W/ YUCCAS MG: FINE AND INDISTINCT BG: NOT VISIBLE	FG: T LINE SOFT, HWY MG: BG NON VIS
LINE	FG: FLAT ALUVIAN MG: CONCAVE VALLEY TO ALLY LAKE BG: ILLEGIBLE, DIAGONAL	FG: RUGGED BUT NOT STRIKING DIST LINE AT MG MG: BG: NOT VISIBLE	FG: REP VERT T-LINE NUMB MG: LONG THIN THIN LINE BG: BLOCK HTA, CRS SUD
COLOR	FG: YELLOW TAN - GRAY TAN MG: BLACK-BRN SOME RED/TAN BG: BLK W/HAZE	FG: OLIVES, GREEN GRY TAN MG: DARK GREEN - ALMOST BLK BG: NOT VISIBLE	FG: T-LIN BLK W/SLIGHT GREY TINT MG: TAN, DRK ORNG DOTS BG NON VIS
TEXTURE	FG: FINE MG: MOD AND GRADUAL BG: COARSE DOTTED	FG: MED WITH DARK MED MG: FINE AND THIN BG: NON VISIBLE	FG: FINE SOFT LINE MG: MED TO COARSE THICK BG: FINE LINE HWY NOT VISIBLE

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEXTURE			

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? ___Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
M. Chandler, K. Sprowl, and C. Martin

Form 8400-4

PROGRAM: C

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: September 21, 2011 M. CHANDLER

District/ Field Office: Southern Nevada

Resource Area: Las Vegas

Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name K Road Power	4. Location Township_____	5. Location Sketch
2. Key Observation Point 4	Range_____	
3. VRM Class VRM 4	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: ROW ROLLING HILLS MG: ROLL-Z-ANGULAR HILLS BG PYRAMID SLOPING	FG: SIMPLE/NON DIVERSE FEW SPARSE CREOSOTE MG BG > NOT VISIBLE	FG RR, TELINE, FENCE LINE BILBRD. RR BLDG MG BG NOT VISIBLE
LINE	FG: ROLLING UNDULATING MG: FAIR MOD. BG: FAIR SMOOTH	FG: UNDEFINED SIMPLE ONE LEVEL MG BG > NOT VISIBLE	FG HORZ RR TELINE, VERT TEL POLES MG / HORZ FENCE BG
COLOR	FG: NOT VISIBL MG: DARK BRN-RED BG: SHADES OF BLK	FG: OLIVE GREEN, ORANGE GRAY-SILVER MG BG NOT VISIBLE	FG: BRN-BLACK HUES TELINE FENCE LINE DRK GRE / RR LINE RR BLD-SILVER
TEX-TURE	FG: SMOOTH MG } COARSE MULTIPLE BG } MTN RANGES	FG FINE & SPARSE DOTTED SCATTERED MG > NOT VISIBLE BG	FG VERY FINE, NEEDLE LIKE DUE TO SPACING

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEX-TURE			

SECTION D. CONTRAST RATING ___SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? ___Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
M. Chandler, K. Sprowl, and C. Martin

Form 8400-4

AS Paytarian

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: September 21, 2011

District/ Field Office: Southern Nevada

Resource Area: Las Vegas

Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name K Road Power	4. Location Township_____	5. Location Sketch
2. Key Observation Point	Range_____	
3. VRM Class Class IV	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG - level gently sloping - SE MG - hills sloping - N ward, towards lake BG - done shaped, uneven	FG - horizontal with scattered vert MG - indistinct BG - not visible,	FG - power line, vehicle plants (V/H) paved/dirt road MG - dirt/paved roads, railroad BG - indistinct
LINE	FG - straight, not sloping MG - slope se NW, towards lake bed BG - uneven	FG - horizontal, vert. elements MG - indistinct BG - indistinct	FG - repeating vert. elements, sloping road - NE MG - horizontal, vehicle elements BG - indistinct
COLOR	FG - yellow/tan MG - medium brown, shades of red/brown BG - pale blue haze	FG - Green, gray, little yellow MG - green, brown BG - indistinct	FG - white/tan MG - Black, brown/tan BG - indistinct
TEX-TURE	FG - coarse, vegetated MG - vegetated, hilly BG - mountainous.	FG - dotted, continuous MG - uniform BG - indistinct	FG - + line uniform, gradational Road and rotal + dumped rock MG - scattered and linear towers BG - indistinct

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEX-TURE			

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? ___Yes ___No
(Explain on reverses side)

3. Additional mitigating measures recommended
___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
M. Chandler, K. Sprowl, and C. Martin

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 9/21/11
District/ Field Office: Las Vegas North
Resource Area:
Activity (program): Renewables

SECTION A. PROJECT INFORMATION

Eldorado Moapa Solar

1. Project Name # 1	4. Location Township	5. Location Sketch
2. Key Observation Point	Range	See map
3. VRM Class	Section	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

		1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	F	-Sloping, flat	Flat - creosote / yucca	TLines (multiple), Hwy
	M	Rolling to flat	inconsistent	Plants, substation
	B	Sloping - Jagged	N/A	N/A
LINE	F	flat	creosote/yucca	vertical lines
	M	curved - rolling	District Line	thin - long lines
	B	Irregular - jagged	N/A	Blocky
COLOR	F	yellow tan	green - olive	TLine - black - grey
	M	black - Brown	Dark green - blk	Tan - Dark browns
	B	blk blue w/ haze	N/A - hazy	Non Vis
TEX-TURE	F	Fine	medium with spots	Fine - structural, lattice
	M	Gradual	Fine + thin	Fine lines
	B	Coarse Notted	N/A	N/A

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEX-TURE			

SECTION D. CONTRAST RATING ___SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? ___Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

Evaluator's Names: Chad Martin — Date: 9/21

This page intended to be blank.

Form 8400-4

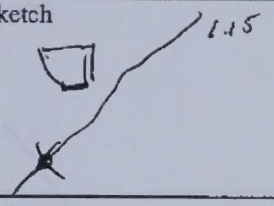
Martin

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 9/21/11
District/ Field Office:
Resource Area:
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name: [redacted]
2. Key Observation Point: [redacted] #3
3. VRM Class: Class III
4. Location Township_____ Range_____ Section_____
5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	F- rolling smooth round M- flat & mesa B- jagged mts	clumped linear - clumped	T line ~~35~~ KV 12 / I-15 N/A Rail road N/A
LINE	F- flat M- flat B- jagged	angled flat N/A	linear - horizontal N/A N/A
COLOR	F- yellow M- brown - yellow B- Blue grey haze	green brown grey	brown - black - gray N/A N/A
TEX-TURE	F- Grainal M- smooth B- hazy	spotty spotty to linear smooth	wood - solid lines N/A N/A

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Solar field not seen 500 KV hidden behind	hills to west	
LINE			
COLOR			
TEX-TURE			

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? __Yes __No (Explain on reverses side)

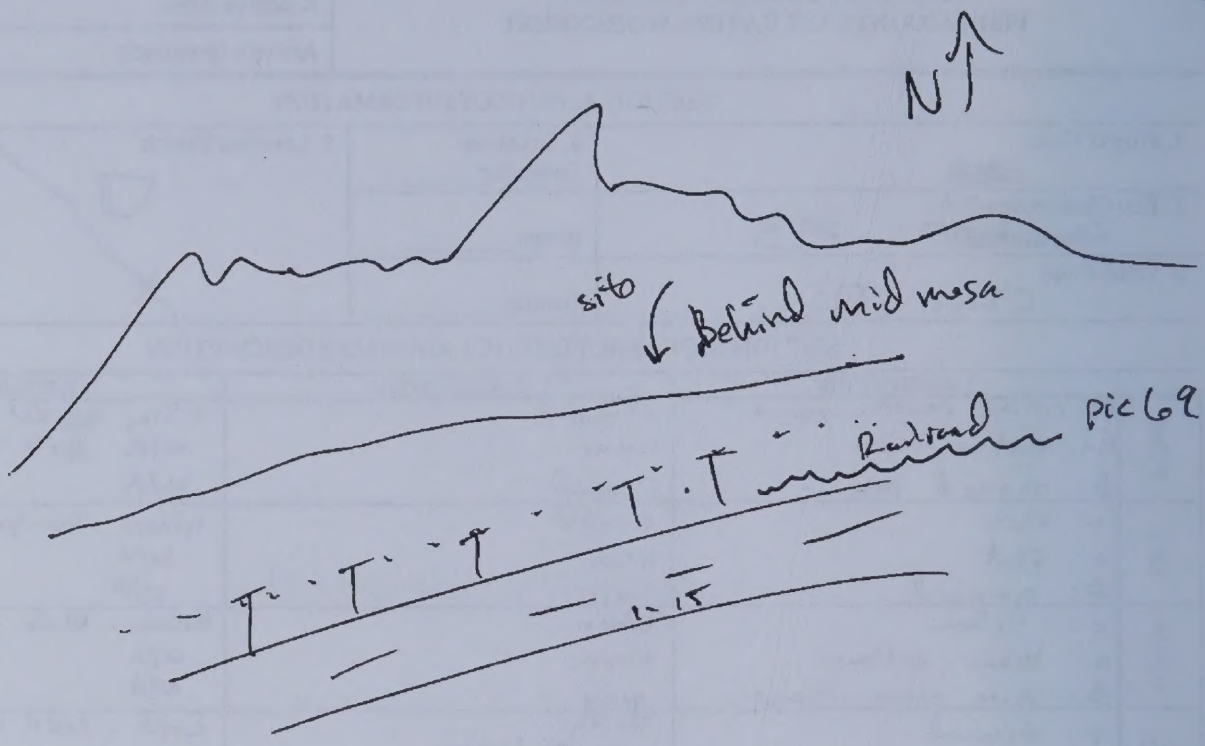
3. Additional mitigating measures recommended __Yes __No (Explain on reverses side)

Evaluator's Names Date

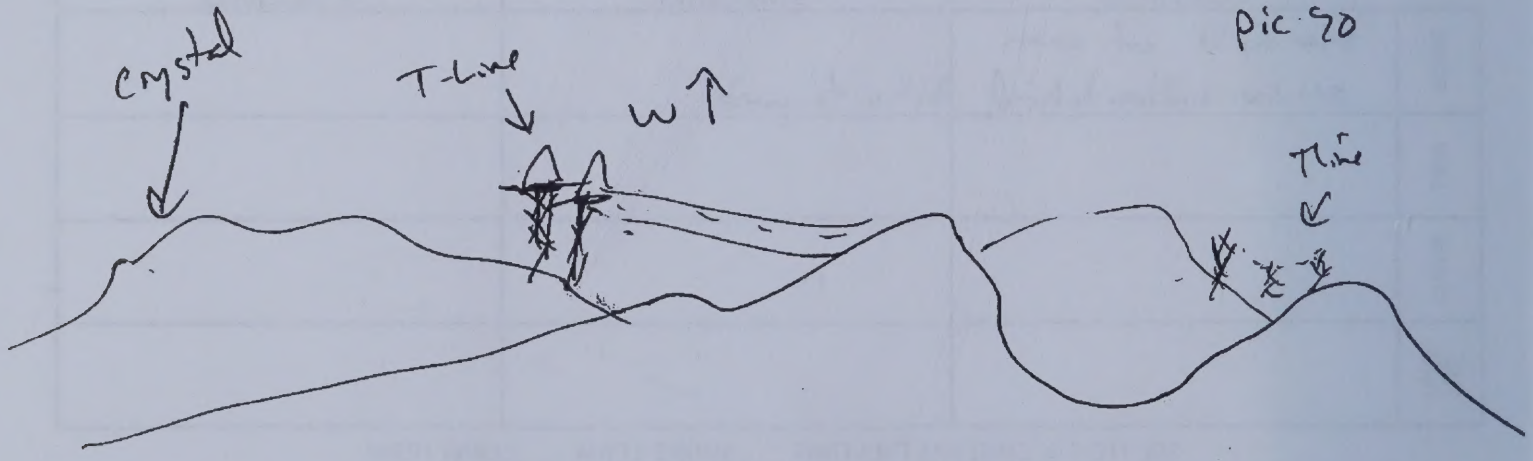
CMR

SECTION D. (Continued)

Comments from item 2.



Additional Mitigating Measures (See item 3)



Form 8400-4

Martin

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 9/21/11
District/ Field Office:
Resource Area:
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name	4. Location Township	5. Location Sketch
2. Key Observation Point 4	Range	
3. VRM Class ~~II~~ looking to III	Section	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	F gravel m gravel b mts	rough - evenly spaced creosote & ~~bur~~ bur grass N/A mts	cattle fence RR fence + WKU line N/A
LINE	hilly - rolling flat multi jagged mts	low & flat creosote flat - low N/A	vertical fence post vertical - even spaced poles N/A
COLOR	Tan / ~~green~~ ~~orange green~~ tan/yellow blue slate/grey	green/tan yellow/orange gray - blue	black black N/A
TEX-TURE	rough - rolling smooth / flat rugged - dappled	rough - Creosote smooth smooth	skinny - infinite skinny - poles - rocky N/A

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	m smooth	lacking or none	no panels/solid
LINE	m flat - horizontal	N/A	flat / horizontal
COLOR	m N/A Black / tan	N/A	dark gray / black
TEX-TURE	m smoother not seen	N/A	Smooth

SECTION D. CONTRAST RATING ___SHORT TERM ___LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM		X			X						X	
	LINE			X				X				X	
	COLOR		X			X				X			
	TEXTURE		X			X					X		

2. Does project design meet visual resource management objectives? ___Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

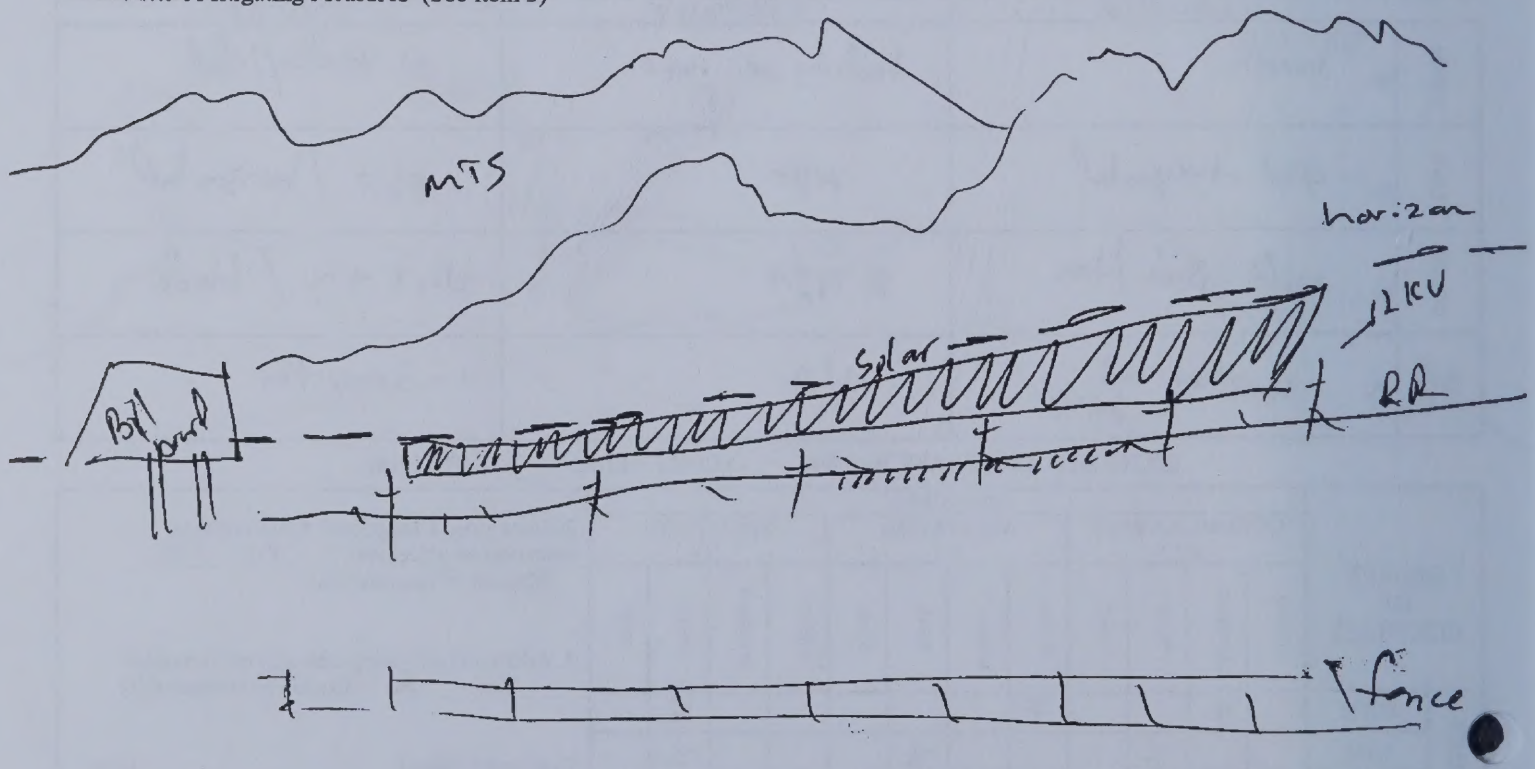
Evaluator's Names Date

CMR

SECTION D. (Continued)

Comments from item 2.

Additional Mitigating Measures (See item 3)



Form 8400-4

Martin

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 9/21/11
District/ Field Office:
Resource Area:
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name	4. Location Township	5. Location Sketch
2. Key Observation Point #5	Range	
3. VRM Class III looking into III	Section	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

		1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	F	flat	flat - solid	N/A
	M	flat mesa to rolling hill	Bare - to solid on mesa	Travel Plaza
	B	Jagged mts	Base	500K Towers
LINE	F	~~to~~ flat	horizontal	N/A
	M	flat to rolling	horizontal	Blocky
	B	Jagged	N/A	vertical
COLOR	F	~~G~~ Tan Pale	Green	N/A
	M	whit / tan / red bluff	Black	white / gray
	B	~~Brown~~ Brown	N/A	gray
TEX-TURE	F	Gravel	smooth - solid creosote	N/A
	M	smooth	Bare to solid creosote on mesa	Bold
	B	rocky	N/A	hazy

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	M flat horizontal O/M Building / Substation Block in left corner	no change	no change except for O/M area
LINE	Blade to large flat area	no change	no change
COLOR	gray / tan building - gray black PV	slightly darker	slight change
TEX-TURE	~~SEE~~ Solid - ~~S~~ Smooth	smoother	slight change

SECTION D. CONTRAST RATING ___SHORT TERM ___LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM			X					X			X	
	LINE			X					X			X	
	COLOR			X				X				X	
	TEXTURE		X					X			X		

2. Does project design meet visual resource management objectives? ___Yes ___No (Explain on reverses side)

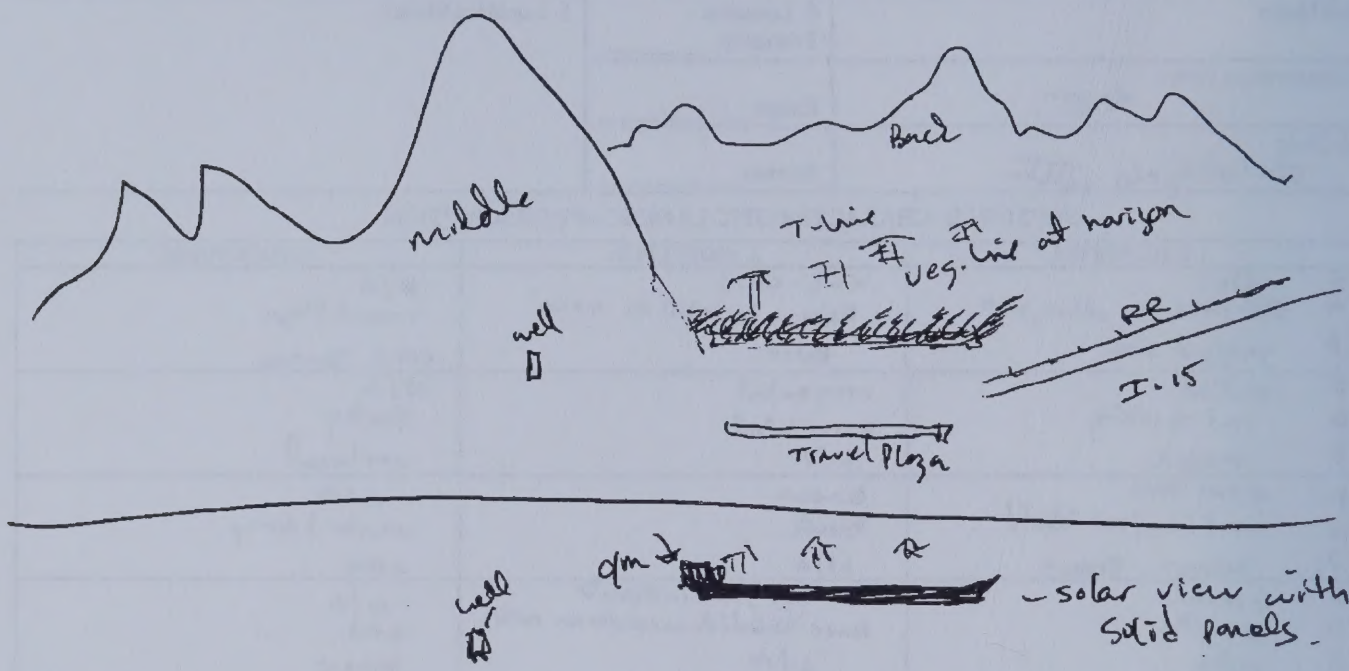
3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

Evaluator's Names: Chuck Martin
Date: 9/21

SECTION D. (Continued)

Comments from item 2.

From old spanish trail



Additional Mitigating Measures (See item 3)

Paint o/m building a Tan/ Brown color to blend with background mts.

Keep T-Line structures in similar or less form (Adobe vs. lattice) and align with existing.

Appendix I

Air Quality Tables

This page intended to be blank.

Table

Summary of Regulated Air Pollutant Emissions by Construction Emission Sources (Construction Phase - Tons/Year)
K Road Moapa Solar LLC Project

Construction Emission Source	Total Criteria Pollutant Emissions (tons/year)*						GHG Total Emissions (metric tons/year)**		
	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4	CO_2e
Combustion Emissions: Non-Road Equipment	5.1	49.1	75.9	0.8	3.8	3.8	5,029.7	--	5,029.7
Combustion Emissions: On-Road Vehicles	6.0	53.1	18.0	0.1	1.0	0.7	6,807.9	0.4	6,816.8
Fugitive Dust: On-Site Construction	--	--	--	--	39.5	7.4	--	--	--
Fugitive Dust: On-Site and Off-Site Paved/Unpaved Roads	--	--	--	--	34.9	3.8	--	--	--
Total	**11.1**	**102.2**	**94.0**	**0.9**	**79.2**	**15.8**	**11,837.6**	**0.4**	**11,846.5**

Notes:

*Tons/Year - Typical emissions profile during the construction phase, representative of a 12-month period.

**CO_2 equivalents (CO_2e) calculated by multiplying CO_2 emissions by a global warming potential (GWP) of 1 and CH_4 emissions by a GWP of 21

Table A2

Summary of Regulated Air Pollutant Emissions - Total Emission Sources (Construction Phase - Annual Tons/Year)

K Road Moapa Solar LLC Project

Year	Total Criteria Pollutant Emissions (tons/year)						GHG Total Emissions (metric tons/year)		
	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4	CO_2e
2011*	5.6	51.1	47.0	0.4	39.6	7.9	5,918.8	0.2	5,923.3
2012	11.1	102.2	94.0	0.9	79.2	15.8	11,837.6	0.4	11,846.5
2013	11.1	102.2	94.0	0.9	79.2	15.8	11,837.6	0.4	11,846.5
2014	11.1	102.2	94.0	0.9	79.2	15.8	11,837.6	0.4	11,846.5
2015	11.1	102.2	94.0	0.9	79.2	15.8	11,837.6	0.4	11,846.5
TOTAL**	**50.0**	**460.0**	**422.8**	**3.9**	**356.6**	**71.0**	**53,269.3**	**1.9**	**53,309.3**

Notes:

*Emissions from 2011 have been reduced in half, assuming that construction started in June 2011.

**Total represents the total sum of regulated air pollutants over the 5-year construction phase.

Comparison of Yearly Construction Emissions to General Conformity De Minimis Thresholds
K Road Moapa Solar LLC Project

CO and PM_{10} Nonattainment Area

Hydrographic Area	Year	Emissions (tons/year)	
		CO	PM_{10}
212*	2011	26.5	18.0
	2012	53.1	35.9
	2013	53.1	35.9
	2014	53.1	35.9
	2015	53.1	35.9
General Conformity De Minimis Threshold		**100**	**70**

Notes:

*Emission estimates provided reflect mobile source emissions related to vehicles supporting the plant at the proposed site located in HA 218. The majority of PM_{10} emissions from the project are generated from on-site construction and vehicle traffic; CO emissions are primarily generated from vehicle traffic. The proposed site location, HA 218 is attainment for CO and PM_{10}.

Ozone Nonattainment Area

Hydrographic Area	Year	Emissions (tons/year)	
		VOC	NO_x
218*	2011	5.6	47.0
	2012	11.1	94.0
	2013	11.1	94.0
	2014	11.1	94.0
	2015	11.1	94.0
General Conformity De Minimis Threshold		**100**	**100**

Notes:

*Regional affect on air quality. Proposed site is located in HA 218. Other nearby HAs are also considered ozone nonattainment areas (i.e., 212, 214, 216 and 217). Emissions identified reflect total loadings to the general nonattainment areas. VOC and NO_x are considered precursors to the formation of ozone.

Table A4
Summary of Daily Emissions (Construction Phase - Lbs/Day)
K Road Moapa Solar LLC Project

Construction Emission Source	Daily Emissions (lbs/day)					
	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Combustion Emissions: Non-Road Equipment	34.2	327.6	506.1	5.2	25.4	25.4
Combustion Emissions: On-Road Vehicles	39.9	353.9	120.2	0.5	6.5	4.9
Fugitive Dust: On-Site Construction	--	--	--	--	263.5	49.6
Fugitive Dust: On-Site and Off-Site Roads	--	--	--	--	232.9	25.3
Total	**74.0**	**681.5**	**626.4**	**5.7**	**528.3**	**105.2**

Table

Regulated Air Pollutant Emission Factors for Diesel and Propane Non-Road Construction Equipment (Construction Phase)
K Road Moapa Solar LLC Project

Construction Equipment Assumptions		Emission Factor Data									
Equipment Type	Equipment Engine Size (hp)	Equipment Used for Emission Factor	SCC	Equipment Size Range	Fuel Type	Emission Factor (g/hp-hr)*					
						VOC	CO	NO_x	SO_2	PM	CO_2
Equipment Fueled with Diesel											
Air Compressor	50	Compressors	2270006015	40 < hp ≤ 75	Diesel	0.52	2.37	5.6	0.0049	0.47	536.207
Asphalt Paver	120	Pavers	2270002003	175 < hp ≤ 300	Diesel	0.32	1.14	5.28	0.0049	0.31	536.207
Backhoe	120	Tractor/Loader/Backhoes	2270002066	100 < hp ≤ 175	Diesel	0.78	2.23	6.24	0.0049	0.55	536.207
Compactor	120	Compactors	2270002009	100 < hp ≤ 175	Diesel	0.28	1.53	4.73	0.0049	0.34	536.207
Crane Small (Hydraulic Vibrating Post Driver and Stickboom Crane)	175	Cranes	2270002045	100 < hp ≤ 175	Diesel	0.34	0.87	5.65	0.0049	0.28	536.207
Crane large	500	Cranes	2270002045	300 < hp ≤ 600	Diesel	0.258	0.789	3.710	0.06	0.18	530.236
Dozer	250	Crawler Tractor/Dozer	2270002069	175 < hp ≤ 300	Diesel	0.241	1.099	3.228	0.05	0.23	536.075
Generator	50	Diesel Industrial Engine	--	40 < hp ≤ 75	Diesel	1.12	3.03	14.06	0.89	0.96	500.94
Grader	175	Graders	2270002048	100 < hp ≤ 175	Diesel	0.353	3.881	4.170	0.051	0.522	595.053
Light Tower	50	Diesel Industrial Engine	--	40 < hp ≤ 75	Diesel	1.12	3.03	14.06	0.89	0.96	500.94
Loader	250	Tractor/Loader/Backhoes	2270002066	175 < hp ≤ 300	Diesel	0.78	2.23	6.24	0.005	0.55	536.207
Maxi Sneeker (Trencher)	50	Trenchers	2270002030	40 < hp ≤ 75	Diesel	0.294	1.34	4.024	0.013	0.268	535.911
Skid Steer (Bobcat)	50	Skid Steer Loaders	2270002072	40 < hp ≤ 75	Diesel	1.614	8.144	6.667	0.07	1.257	690.94
Welding Machine	50	Welders	2270006025	40 < hp ≤ 75	Diesel	2.024	8.181	6.634	0.054	1.161	689.691
Equipment Fueled with Propane											
Aerial Lift	120	Other Construction Equipment	2265002081	100 < hp ≤ 175	Propane	2.176	69.8	57.5	0.0106	0.696	1995.8
Fork Lift	50	Rough Terrain Forklifts	2270002057	40 < hp ≤ 75	Propane	2.176	69.8	57.5	0.0106	0.696	1995.8

Notes:

*Emission factors are based on similar pieces of equipment used in other environmental impact statements. The emission factors are conservative based on the size (hp) of the equipment. The original factors used in similar projects were obtained from the EPA NONROAD Emissions Model. Propane emission factors are based on natural gas factors found in AP-42, Section 3.2. Emission factors for the generator and light tower are based on AP-42 Table 3.3-1. Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines.

Table A6
Regulated Air Pollutant Emissions from Diesel and Propane Non-Road Construction Equipment (Construction Phase - Tons/Year)
K Road Moapa Solar LLC Project

Equipment Type	No. of Units*	Equipment Engine Size (hp)	Load (%)**	Fuel Type	Estimated Average Daily Usage (hrs/day)	Average Criteria Pollutant Daily Emissions (lbs/day)					Average GHG Daily Emissions (lbs/day)	Total Work Days per Unit***	Criteria Pollutant Total Emissions (tons/year)					GHG Total Emissions (metric tons/year)
						VOC	CO	NO_x	SO_2	PM	CO_2		VOC	CO	NO_x	SO_2	PM	CO_2
Equipment Fueled with Diesel																		
Air Compressor	2	50	59	Diesel	10	0.7	3.1	7.3	0.01	0.6	697.4	300	0.1	0.5	1.1	0.001	0.1	94.9
Asphalt Paver	1	120	59	Diesel	10	0.5	1.8	8.2	0.01	0.5	836.9	300	0.1	0.3	1.2	0.001	0.1	113.9
Backhoe	4	120	21	Diesel	10	1.7	5.0	13.9	0.01	1.2	1,191.6	300	0.3	0.7	2.1	0.002	0.2	162.1
Compactor	4	120	59	Diesel	10	1.7	9.6	29.5	0.0	2.1	3,347.7	300	0.3	1.4	4.4	0.00	0.3	455.6
Crane Small (Hydraulic Vibrating Post Driver and Stickboom Crane)	9	175	43	Diesel	10	5.1	13.0	84.4	0.1	4.2	8,005.9	300	0.8	1.9	12.7	0.01	0.6	1,089.4
Crane large	1	500	43	Diesel	10	1.2	3.7	17.6	0.3	0.8	2,513.2	300	0.2	0.6	2.6	0.04	0.1	342.0
Dozer	2	250	59	Diesel	10	1.6	7.1	21.0	0.3	1.5	3,486.4	300	0.2	1.1	3.1	0.1	0.2	474.4
Generator	5	50	59	Diesel	10	3.6	9.9	45.7	2.9	3.1	1,628.9	300	0.5	1.5	6.9	0.4	0.5	221.7
Grader	2	175	59	Diesel	10	1.6	17.7	19.0	0.2	2.4	2,709.0	300	0.2	2.7	2.8	0.03	0.4	368.6
Light Tower	2	50	59	Diesel	10	1.5	3.9	18.3	1.2	1.2	651.6	300	0.2	0.6	2.7	0.2	0.2	88.7
Loader	5	250	21	Diesel	10	4.5	12.9	36.1	0.03	3.2	3,103.0	300	0.7	1.9	5.4	0.004	0.5	422.3
Maxi Sneeker (Trencher)	4	50	59	Diesel	10	0.8	3.5	10.5	0.03	0.7	1,394.1	300	0.1	0.5	1.6	0.01	0.1	189.7
Skid Steer (Bobcat)	2	50	21	Diesel	10	0.7	3.8	3.1	0.03	0.6	319.9	300	0.1	0.6	0.5	0.00	0.1	43.5
Welding Machine	4	50	21	Diesel	10	1.9	7.6	6.1	0.1	1.1	638.6	300	0.3	1.1	0.9	0.01	0.2	86.9
Equipment Fueled with Propane																		
Aerial Lift	2	120	59	Propane	2	1.4	43.6	35.9	0.01	0.4	1,246.1	300	0.2	6.5	5.4	0.001	0.1	169.6
Fork Lift	4	50	59	Propane	10	5.7	181.6	149.6	0.03	1.8	5,191.9	300	0.8	27.2	22.4	0.00	0.3	706.5
Total						**34.2**	**327.6**	**506.1**	**5.2**	**25.4**	**36,962.3**	--	**5.1**	**49.1**	**75.9**	**0.8**	**3.8**	**5,029.7**

Notes:
*Number of units is conservative and is based on the greatest amount of units used during construction for individual pieces of equipment.
**Load is reflective of physical operation of the engine. Engines typically will not be operated at maximum hp for an extended period of time.
***Total working days (300 days/year) based on 6 days/week and 50 weeks/year.

Ta
On-Road Construction Vehicle Usage/Ve Miles Travelled (Construction Phase)
K Road Moapa Solar LLC Project

Vehicle Type	Vehicle Description	Average Number of Vehicles per Day**	Total Working Days***	Total Daily VMT per Unit (VMT/day)*					Total Daily VMT All Units (VMT/day)			Total Overall VMT of All Units (VMT)		
				Unpaved Roads	Paved Roads	Max Daily Onsite	Max Daily Offsite - Paved	Total	Unpaved Roads	Paved Roads	Total	Unpaved Roads	Paved Roads	Total
Heavy Heavy Duty Diesel Trucks	Dump Trucks	5	300	2	8	10	0	10	10	40	50	3,000	12,000	15,000
	Concrete Trucks	2	300	2	8	10	80	90	4	176	180	1,200	52,800	54,000
Diesel Delivery Trucks	Delivery Trucks	37	300	4	16	20	100	120	148	4,292	4,440	44,400	1,287,600	1,332,000
Light-Duty Gasoline Vehicles	Lightweight Trucks	14	300	3	27	30	0	30	42	378	420	12,600	113,400	126,000
	Worker Commute Vehicles	300	300	2	8	10	100	110	600	32,400	33,000	180,000	9,720,000	9,900,000
Total				**13**	**67**	**80**	**280**	**360**	**804**	**37,286**	**38,090**	**241,200**	**11,185,800**	**11,427,000**

Notes:

*To estimate paved and unpaved, the max daily onsite distance/vehicle (miles/day) was used. Assumed sealed roads meant paved.

**Number of units is conservative and is based on the greatest amount of units used during construction for individual pieces of equipment.

***Total working days (300 days/year) based on 6 days/week and 50 weeks/year.

Table A8
On-Road Construction Vehicle Exhaust Emission Factors (Construction Phase)
K Road Moapa Solar LLC Project

Scenario Year	Equipment Type	Emission Factor* (lb/VMT)							
		VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
2011	Heavy Heavy Duty Diesel Truck	0.00279543	0.01112463	0.03455809	0.00003972	0.00166087	0.00144489	4.22045680	0.00012910
	Diesel Delivery Trucks	0.00241868	0.01693242	0.01893366	0.00002728	0.00070097	0.00059682	2.75180822	0.00011655
	Light-Duty Gasoline Vehicles	0.00085223	0.00826276	0.00084460	0.00001077	0.00008879	0.00005653	1.10235154	0.00007678

Notes:

*Heavy Heavy Duty Diels Truck Emission Factors based on "Highest (Most Conservative_EMFAC2007 (version 2.3) Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks" (South Coast Air Quality Management District, Scenario Year 2011)

*Delivery Truck and Passenger Vehicle Emission Factors based on "Highest (Most Conservative_EMFAC2007 (version 2.3) Emission Factors for On-Road Passenger Vehicles & Delivery Trucks" (South Coast Air Quality Management District, Scenario Year 2011)

Ta

On-Road Construction Vehicle Emissions (Construction Phase - Tons/Year)

K Road Moapa Solar LLC Project

Vehicle Type	Average Daily Vehicle Miles Travelled (VMT/day)	Total Criteria Pollutant Emissions (lbs/day)						Total Miles Travelled (VMT)	Total Criteria Pollutant Emissions (tons/year)						Total GHG Emissions (metric tons/year)	
		VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$		VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Heavy Heavy Duty Diesel Truck	230	0.6	2.6	7.9	0.01	0.4	0.3	69,000	0.1	0.4	1.2	0.001	0.1	0.0	132.09	0.00
Diesel Delivery Trucks	4,440	10.7	75.2	84.1	0.1	3.1	2.6	1,332,000	1.6	11.3	12.6	0.02	0.5	0.4	1,662.60	0.07
Light-Duty Gasoline Vehicles	33,420	28.5	276.1	28.2	0.4	3.0	1.9	10,026,000	4.3	41.4	4.2	0.1	0.4	0.3	5,013.18	0.35
Total	--	**39.9**	**353.9**	**120.2**	**0.5**	**6.5**	**4.9**	--	**6.0**	**53.1**	**18.0**	**0.1**	**1.0**	**0.7**	**6,807.88**	**0.42**

Table A10
Fugitive Dust Emission Factors - Unpaved/Paved Roads (Construction Phase)
K Road Moapa Solar LLC Project

Unpaved Roads - Emission Factor Derivation

$E = k(s/12)^a(W/3)^b$ AP-42 Section 13.2.2 (11/06 version)

where:

E = particulate emission factor (lb/VMT)
k, a, b = empirical constants for industrial roads
s = surface material silt content (%)
W = average vehicle weight (tons)

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight*	tons	2.7	2.7	Assumption
Constant, k	lb/VMT	1.5	0.15	Table 13.2.2-2 (worst case)
Constant, a		0.9	0.9	Table 13.2.2-2 (worst case)
Constant, b		0.45	0.45	Table 13.2.2-2 (worst case)
Silt Content, s	%	8.5	8.5	Table 13.2.2-1 (construction sites)
Uncontrolled Emission Factor, E	**lb/VMT**	**1.049**	**0.105**	**Calculation**
Control Efficiency for Watering**	%	0.74	0.74	Assumption
Controlled Emission Factor, E	**lb/VMT**	**0.273**	**0.027**	**Calculation**

Notes:

*Mean vehicle weight estimated based on average daily use on site roads (7 heavy-duty diesel trucks, 37 diesel delivery trucks, 14 light-duty gasoline trucks and 300 passenger vehicles). Vehicle weights were estimated to be the following: heavy-duty diesel trucks - 12,000 lbs, diesel trucks - 7,500 lbs, and light-duty trucks and passenger vehicles - 5,000 lbs

**Control efficiency for watering taken from WRAP Fugitive Dust Handbook (11/04)

Paved Roads - Emission Factor Derivation

$E = k(sL)^{0.91}(W)^{1.02}$ AP-42 Section 13.2.2 (1/11 version)

where:

E = particulate emission factor (lb/VMT)
k = particle size multiplier
sL = road surface silt loading (g/m^2)
W = average vehicle weight (tons)

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight*	tons	2.5	2.5	Assumption
k factor	lb/VMT	0.0022	0.00054	Table 13.2-1.1
Silt Loading, sL	g/m^2	0.05	0.05	Table 13.2.1-3
Uncontrolled Emission Factor, E**	**lb/VMT**	**0.00037**	**0.00009**	**Calculation**

Notes:

*Mean vehicle weight estimated based on average traffic on Interstate 15 and the majority of traffic is assumed to be light-duty gasoline vehicles/trucks. Light-duty gasoline vehicles/trucks weight an average of 5,000 lbs or 2.5 tons.

** Emission factors was not adjusted to account for the exhaust, brake wear and tire wear factors from EPA's MOBILE6.2 or MOVES2010.

Ta

Fugitive Dust Emissions from On-Road Construction Vehicle Travel on On-Site and Off-Site Roads (Construction Phase)

K Road Moapa Solar LLC Project

Paved Roads						Unpaved Roads						All Roads			
Average Daily Miles Travelled (VMT/day)	Total Miles Travelled on Paved Roads (VMT)	Average Daily Fugitive Dust Emissions (lbs/day)		Total Fugitive Dust Emissions (tons/year)		Average Daily Miles Travelled (VMT/day)	Total Miles Travelled on Paved Roads (VMT)	Average Daily Fugitive Dust Emissions (lbs/day)		Total Fugitive Dust Emissions (tons/year)		Average Daily Fugitive Dust Emissions (lbs/day)		Total Fugitive Dust Emissions (tons/year)	
		PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$			PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
37,286	11,185,800	13.7	3.4	2.1	0.5	804	241,200	219.3	21.9	32.9	3.3	232.9	25.3	34.9	3.8

Table A12
Fugitive Dust Emissions from On-Site Construction Activities (Construction Phase)
K Road Moapa Solar LLC Project

Activity	Daily Construction Use		Duration of Activity (days)	Emission Factor*			Average Daily Emissions (lbs/day)		Total Emissions (tons/year)	
	Value	Units		PM_{10}	$PM_{2.5}$	Units	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Bulldozing**	20	hr/day	300	2.464	1.11	lb/hr	49.3	22.2	7.4	3.3
Grading***	200	VMT/day	300	1.071	0.137	lb/VMT	214.2	27.4	32.1	4.1
Total							**263.5**	**49.6**	**39.5**	**7.4**

Notes:
*See emission factor derivations below
**Daily construction use of 20 hrs/day based on 2 dozers operating 10 hrs/day
***Daily construction use of 200 VMT/day based on 2 graders operating for 10 hours/day at 10 miles per hour

Bulldozing and Grading Emission Factor Derivation

Activity	Emission Factor Units	Uncontrolled Emission Factor		Controlled Emission Factor*	
		PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Bulldozing**	lb/hr	7.04	3.17	2.464	1.11
Grading***	lb/VMT	3.06	0.392	1.071	0.137

Notes:
*Assume 65% dust control factor based on as-needed watering
**Emission factors from AP-42 Section 11.9, Table 11.9-1 (Bulldozing-Overburden). Assume silt content of 8.5% and moisture content of 2%
***Emission factors from AP-42 Section 11.9, Table 11.9-1 (Grading). Assume vehicle speed of 10 miles per hour

Tal

Summary of Regulated Air Pollutant Emissions By Operation Emission Sources (Operational Phase - Tons/Year)
K Road Moapa Solar LLC Project

Operational Emission Source	Total Criteria Pollutant Emissions (tons/year)*						GHG Total Emissions (metric tons/year)**			
	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4	SF_6	CO_2e
Combustion Emissions: Stationary Emergency Fire Pump	0.003	0.03	0.03	0.01	0.002	0.002	4.1	--	--	4.1
Combustion Emissions: Non-Road Equipment	2.0	53.5	29.9	0.01	0.4	0.4	1,035.0	--	--	1,035.0
Combustion Emissions: On-Road Vehicles and ATVs	0.5	4.0	10.1	0.01	0.1	0.1	748.9	0.03		749.6
Fugitive Dust: On-Site and Off-Site Unpaved/Paved Roads	--	--	--	--	0.2	0.1	--	--	--	--
SF_6 Leakage from Equipment	--	--	--	--	--	--	--	--	0.001	30.9
Total	**2.5**	**57.5**	**40.1**	**0.03**	**0.7**	**0.5**	**1,788.0**	**0.03**	**0.001**	**1,819.6**

Notes:

*Tons/Year - Typical emissions profile during the operational phase, representative of a 12-month period.

**CO_2 equivalents (CO_2e) calculated by multiplying CO_2 emissions by a global warming potential (GWP) of 1, CH_4 emissions by a GWP of 21, and SF_6 emissions by a GWP of 23,900

Table B2
Comparison of Operational Emissions to General Conformity De Minimis Thresholds
K Road Moapa Solar LLC Project

CO and PM_{10} Nonattainment Area

Hydrographic Area	Emissions (tons/year)	
	CO	PM_{10}
212*	3.97	0.09
General Conformity De Minimis Threshold	**100**	**70**

Notes:
*Emission estimates provided reflect mobile source emissions related to vehicles supporting the plant at the proposed site located in HA 218. The majority of PM_{10} emissions from the project are generated from on-site construction and vehicle traffic; CO emissions are primarily generated from vehicle traffic. The proposed site location, HA 218 is attainment for CO and PM_{10}.

Ozone Nonattainment Area

Hydrographic Area	Emissions (tons/year)	
	VOC	NO_x
218*	2.46	40.09
General Conformity De Minimis Threshold	**100**	**100**

Notes:
*Regional affect on air quality. Proposed site is located in HA 218. Other nearby HAs are also considered ozone nonattainment areas (i.e., 212, 214, 216 and 217). Emissions identified reflect total loadings to the general nonattainment areas. VOC and NO_x are considered precursors to the formation of ozone.

Tab 3

Emissions for Stationary Diesel Fire Pump (Operational Phase - Tons/Year)

K Road Moapa Solar LLC Project

Parameter	Value	Units
Power Rating	150	hp
Yearly maintenance Operation (1 hr per week)	52	hr/yr

Pollutant	Emission Factor* (lb/hp-hr)	Emission Factor** (g/hp-hr)	Maximum Hourly Emission Rate (lb/hr)	Annual Emissions (tons/year)	GHG Annual Emissions (metric tons/year)
NO_x	--	3.00	0.99	0.026	--
CO	--	3.70	1.22	0.032	--
VOC	--	0.30	0.10	0.003	--
PM_{10}	--	0.22	0.07	0.002	--
$PM_{2.5}$	--	0.22	0.07	0.002	--
SO_2	0.00205	--	0.31	0.008	--
CO_2	1.15	--	172.5	--	4.07

Notes:

*Emission factors from U.S. EPA. 1996. AP-42 Fifth Edition, Volume I - Section 3.3 - Gasoline and Diesel Industrial Engines

**Emission factors for diesel emergency fire pumps in NSPS Subpart IIII. VOC emission factor assumed to represent 10% of VOC/NO_x emission standard listed in this regulation

Table B4
Regulated Air Pollutant Emission Factors for Non-Road Equipment (Operational Phase)
K Road Moapa Solar LLC Project

Construction Equipment Assumptions			Emission Factor Data									
Equipment Type	Purpose	Equipment Engine Size (hp)	Equipment Used for Emission Factor	SCC	Equipment Size Range	Fuel Type	Emission Factor (g/hp-hr)*					
							VOC	CO	NO_x	SO_2	PM	CO_2
Equipment Fueled with Gasoline												
Four-Wheel ATV's (with baskets)	Maintenance on solar systems	30	Specialty Vehicles/Carts	2265001060	25 < hp ≤ 40	Gasoline	4.859	107.338	9.158	0.015	0.068	803.267
Small Bobcat	Periodic site grading	50	Skid Steer Loaders	2270002072	40 < hp ≤ 75	Gasoline	1.614	8.144	6.667	0.07	1.257	690.94
Equipment Fueled with Propane												
Standard 5000 lb Forklift	Maintenance shop & general lifting	125	Rough Terrain Forklifts	2270002057	100 < hp ≤ 175	Propane	2.176	69.8	57.5	0.0106	0.696	1995.8

Notes:
*Emission factors are based on similar pieces of equipment used in other environmental impact statements. The emission factors are conservative based on the size (hp) of the equipment. The original factors used in similar projects were obtained from the EPA NONROAD Emissions Model. Propane emission factors are based on natural gas factors found in AP-42, Section 3.2.

Table
Regulated Air Pollutant Emissions from Non-Road Equipment (Operational Phase - Tons/Year)
K Road Moapa Solar LLC Project

Equipment Type	No. of Units*	Equipment Engine Size (hp)	Load**	Fuel Type	Estimated Average Daily Usage (hrs/day)	Average Criteria Pollutant Daily Emissions (lbs/day)					Average GHG Daily Emissions (lbs/day)	Total Work Days per Unit***	Criteria Pollutant Total Emissions (tons/year)					GHG Total Emissions (metric tons/year)
						VOC	CO	NO_x	SO_2	PM	CO_2		VOC	CO	NO_x	SO_2	PM	CO_2
Four-Wheel ATVs (with baskets)	6	30	30	Unleaded Gasoline	10	5.78	127.78	10.90	0.02	0.08	956.3	300	0.9	19.2	1.6	0.003	0.01	130.1
Small Bobcat	1	50	21	Unleaded Gasoline	10	0.37	1.89	1.54	0.02	0.29	159.9	300	0.1	0.3	0.2	0.002	0.04	21.8
Standard 5000 lb. Forklifts	2	125	59	Propane	10	7.08	226.97	186.98	0.03	2.26	6,489.9	300	1.1	34.0	28.0	0.005	0.3	883.1
Total						**13.23**	**356.64**	**199.42**	**0.07**	**2.64**	**7,606.1**	--	**2.0**	**53.5**	**29.9**	**0.01**	**0.4**	**1,035.0**

Notes:
*Number of units is conservative and is based on the greatest amount of units used during construction for individual pieces of equipment.
**Load is reflective of physical operation of the engine. Engines typically will not be operated at maximum hp for an extended period of time.
***Total working days (300 days/year) based on 6 days/week and 50 weeks/year.

Table B6
On-Road and ATV Vehicle Usage/Vehicle Miles Travelled (Operational Phase)
K Road Moapa Solar LLC Project

Vehicle Description	Vehicle Purpose	Fuel Type	Average Number of Vehicles per Day	Total Working Days*	Average Expected Round Trip per Vehicle (VMT/day)			Total Daily VMT All Units (VMT/day)			Total Overall VMT of All Units (VMT)		
					Paved	Unpaved	Total	Paved	Unpaved	Total	Paved	Unpaved	Total
Vehicles Fueled with Gasoline													
4WD Pickup Truck (Mirror Washing)	Mirror Washing	Unleaded Gasoline	10	300	8	0	8	80	0	80	24,000	0	24,000
4WD Pickup Truck (Security/General Site Work)	Security/General Site Work	Unleaded Gasoline	2	300	10	0	10	20	0	20	6,000	0	6,000
General Employee Vehicles	Transportation to Work & Back	Unleaded Gasoline	38	300	80	0	80	3,040	0	3,040	912,000	0	912,000
Visitor Vehicles	Vendor Site Visits	Unleaded Gasoline	5	300	80	0	80	400	0	400	120,000	0	120,000
Vehicles Fueled with Diesel													
Water Trucks (2000 gal capacity)	Daily Dust Control	Diesel	2	300	30	0	30	60	0	60	18,000	0	18,000
Delivery Trucks	Supply Deliveries	Diesel	5	300	100	0	100	500	0	500	150,000	0	150,000
Total								**4,100**	**0**	**4,100**	**1,230,000**	**0**	**1,230,000**

Notes:
*Total working days (300 days/year) based on 6 days/week and 50 weeks/year.

Ta
On-Road Vehicle Exhaust Emission Factors (Operational Phase)
K Road Moapa Solar LLC Project

Scenario Year	Equipment Type	Emission Factor* (lb/VMT)							
		VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
2016	Heavy Heavy Duty Diesel Truck	0.00161035	0.00704604	0.01887374	0.00003952	0.00094448	0.00078443	4.21063031	0.00007508
	Diesel Delivery Trucks	0.00161521	0.01080542	0.1172881	0.00002767	0.00046606	0.00037868	2.83134285	0.00007355
	Light-Duty Gasoline Vehicles	0.00063254	0.00575800	0.00055658	0.00001071	0.00009392	0.00006131	1.10677664	0.00005623

Notes:

*Heavy Heavy Duty Diels Truck Emission Factors based on "Highest (Most Conservative_EMFAC2007 (version 2.3) Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks" (South Coast Air Quality Management District, Scenario Year 2016)

*Delivery Truck and Passenger Vehicle Emission Factors based on "Highest (Most Conservative_EMFAC2007 (version 2.3) Emission Factors for On-Road Passenger Vehicles & Delivery Trucks" (South Coast Air Quality Management District, Scenario Year 2016)

Table B8
On-Road Vehicle Emissions (Operational Phase - Tons/Year)
K Road Moapa Solar LLC Project

Vehicle Type	Average Daily Vehicle Miles Travelled (VMT/day)	Total Criteria Pollutant Emissions (lbs/day)						Total Miles Travelled (VMT)	Total Criteria Pollutant Emissions (tons/year)						Total GHG Emissions (metric tons/year)	
		VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$		VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Heavy Heavy Duty Diesel Truck	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Diesel Delivery Trucks	560	0.9	6.1	65.7	0.02	0.3	0.2	168,000	0.1	0.9	9.9	0.002	0.04	0.03	215.8	0.01
Light-Duty Gasoline Vehicles	3,540	2.2	20.4	2.0	0.04	0.3	0.2	1,062,000	0.3	3.1	0.3	0.01	0.0	0.03	533.2	0.03
Total	--	**3.1**	**26.4**	**67.7**	**0.1**	**0.6**	**0.4**	--	**0.5**	**4.0**	**10.1**	**0.01**	**0.1**	**0.1**	**748.9**	**0.03**

Fugitive Dust Emission Factors - Unpaved/Paved Roads (Operational Phase)
K Road Moapa Solar LLC Project

Unpaved Roads - Emission Factor Derivation

$E = k(s/12)^a(W/3)^b$ AP-42 Section 13.2.2 (11/06 version)

where:

E = particulate emission factor (lb/VMT)
k, a, b = empirical constants for industrial roads
s = surface material silt content (%)
W = average vehicle weight (tons)

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight*	tons	2.5	2.5	Assumption
Constant, k	lb/VMT	1.5	0.15	Table 13.2.2-2 (worst case)
Constant, a		0.9	0.9	Table 13.2.2-2 (worst case)
Constant, b		0.45	0.45	Table 13.2.2-2 (worst case)
Silt Content, s	%	8.5	8.5	Table 13.2.2-1 (construction sites)
Uncontrolled Emission Factor, E	**lb/VMT**	**1.013**	**0.101**	**Calculation**
Control Efficiency for Watering**	%	0.74	0.74	Assumption
Controlled Emission Factor, E	**lb/VMT**	**0.263**	**0.026**	**Calculation**

Notes:

*Mean vehicle weight estimated based on average daily use on site roads (7 diesel delivery trucks, 13 light-duty gasoline trucks, 43 passenger vehicles, and 6 ATVs). Vehicle weights were estimated to be the following: Diesel trucks - 7,500 lbs, light-duty trucks and passenger vehicles - 5,000 lbs, and ATVs - 4,000 lbs

**Control efficiency for watering taken from WRAP Fugitive Dust Handcook (11/04)

Paved Roads - Emission Factor Derivation

$E = k(sL)^{0.91}(W)^{1.02}$ AP-42 Section 13.2.2 (1/11 version)

where:

E = particulate emission factor (lb/VMT)
k = particle size multiplier
sL = road surface silt loading (g/m^2)
W = average vehicle weight (tons)

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight*	tons	2.5	2.5	Assumption
k factor	lb/VMT	0.0022	0.00054	Table 13.2-1.1
Silt Loading, sL	g/m^2	0.05	0.05	Table 13.2.1-3
Uncontrolled Emission Factor, E**	**lb/VMT**	**0.00037**	**0.00009**	**Calculation**

Notes:

*Mean vehicle weight estimated based on average traffic on Interstate 15 and the majority of traffic is assumed to be light-duty gasoline vehicles/trucks. Light-duty gasoline vehicles/trucks weight an average of 5,000 lbs or 2.5 tons.

** Emission factors was not adjusted to account for the exhaust, brake wear and tire wear factors from EPA's MOBILE6.2 or MOVES2010.

Table B10
Fugitive Dust Emissions from On-Road Vehicle Travel on On-Site and Off-Site Roads (Operational Phase)
K Road Moapa Solar LLC Project

Paved Roads						Unpaved Roads						All Roads			
Average Daily Miles Travelled (VMT/day)	Total Miles Travelled on Paved Roads (VMT)	Average Daily Fugitive Dust Emissions (lbs/day)		Total Fugitive Dust Emissions (tons)		Average Daily Miles Travelled (VMT/day)	Total Miles Travelled on Paved Roads (VMT)	Average Daily Fugitive Dust Emissions (lbs/day)		Total Fugitive Dust Emissions (tons)		Average Daily Fugitive Dust Emissions (lbs/day)		Total Fugitive Dust Emissions (tons)	
		PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$			PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
4,100	1,230,000	1.5	0.4	0.2	0.1	0	0	0.0	0.0	0.0	0.0	1.5	0.4	0.2	0.1

Table 1

Emissions of SF_6 from Electrical Equipment Leaks (Operational Phase)

K Road Moapa Solar LLC Project

Equipment unit Description	Number of Units	SF_6 Capacity per Unit (lbs)	Total SF_6 Capacity for all Unit (lbs)	Estimated Annual Leakage Rate (% per year)*	Annual SF_6 Emissions	
					(lbs/year)	(metric tons/year)
230 kV Breakers	3	110	330	0.5	1.7	0.0007
34.5 kV Breakers	6	40	240	0.5	1.2	0.0005
Total					**2.9**	**0.001**

Notes:

*Estimated annual leakage rate taken from "*Good Practices Guidance and Uncertainty Management in National Greenhouse Gas Inventories - Global Emission Sources of Greenhouse Gas Emissions from Industrial Processes: SF_6*"

Table C1
Summary of REgulated Air Pollutant Emissions by Decommissioing Emission Sources (Decommissioning Phase - Tons/Year)
K Road Moapa Solar LLC Project

Decommissioning Emission Source	Total Criteria Pollutant Emissions (tons/year)*						GHG Total Emissions (metric tons/year)**		
	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4	CO_2e
Combustion Emissions: Non-Road Equipment	2.3	22.0	28.4	0.4	1.8	1.8	2,012.3	--	2,012.3
Combustion Emissions: On-Road Vehicle	0.4	3.1	0.5	0.01	0.1	0.1	1,003.3	0.03	1,003.9
Fugitive Dust: On-Site and Off-Site Unpaved/Paved Roads	--	--	--	--	6.5	0.6	--	--	--
Fugitive Dust: On-Site Decommissioning	--	--	--	--	20.6	3.9	--	--	--
Total	**2.7**	**25.1**	**28.8**	**0.4**	**28.9**	**6.3**	**3,015.6**	**0.03**	**3,016.2**

Notes:

*Tons/Year - Typical emissions profile during the decommissioning phase, phase will last approximately 6 months.

**CO_2 equivalents (CO_2e) calculated by multiplying CO_2 emissions by a global warming potential (GWP) of 1, and CH_4 emissions by a GWP of 21

Comparison of Decommissioning Emissions to General Conformity De Minimis Thresholds
K Road Moapa Solar LLC Project

CO and PM_{10} Nonattainment Area

Hydrographic Area	Emissions (tons/year)	
	CO	PM_{10}
212*	3.1	0.1
General Conformity De Minimis Threshold	**100**	**70**

Notes:

*Emission estimates provided reflect mobile source emissions related to vehicles supporting the plant at the proposed site located in HA 218. The majority of PM_{10} emissions from the project are generated from on-site construction and vehicle traffic; CO emissions are primarily generated from vehicle traffic. The proposed site location, HA 218 is attainment for CO and PM_{10}.

Ozone Nonattainment Area

Hydrographic Area	Emissions (tons/year)	
	VOC	NO_x
218*	2.7	28.8
General Conformity De Minimis Threshold	**100**	**100**

Notes:

*Regional affect on air quality. Proposed site is located in HA 218. Other nearby HAs are also considered ozone nonattainment areas (i.e., 212, 214, 216 and 217). Emissions identified reflect total loadings to the general nonattainment areas. VOC and NO_x are considered precursors to the formation of ozone.

Table C3
Regulated Air Pollutant Emission Factors for Non-Road Equipment (Decommissioing Phase)
K Road Moapa Solar LLC Project

Construction Equipment Assumptions		Emission Factor Data									
Equipment Type	Equipment Engine Size (hp)	Equipment Used for Emission Factor	SCC	Equipment Size Range	Fuel Type	Emission Factor (g/hp-hr)					
						VOC	CO	NO_x	SO_2	PM	CO_2
Equipment Fueled with Diesel											
Air Compressor	50	Compressors	2270006015	40 < hp ≤ 75	Diesel	0.52	2.37	5.6	0.0049	0.47	536.207
Backhoe	120	Tractor/Loader/Backhoes	2270002066	100 < hp ≤ 175	Diesel	0.78	2.23	6.24	0.0049	0.55	536.207
Compactor	120	Compactors	2270002009	100 < hp ≤ 175	Diesel	0.28	1.53	4.73	0.0049	0.34	536.207
Crane large	500	Cranes	2270002045	300 < hp ≤ 600	Diesel	0.258	0.789	3.710	0.06	0.18	530.236
Dozer	250	Crawler Tractor/Dozer	2270002069	175 < hp ≤ 300	Diesel	0.241	1.099	3.228	0.05	0.23	536.075
Generator	50	Diesel Industrial Engine	--	40 < hp ≤ 75	Diesel	1.12	3.03	14.06	0.89	0.96	500.94
Grader	175	Graders	2270002048	100 < hp ≤ 175	Diesel	0.353	3.881	4.170	0.051	0.522	595.053
Light Tower	50	Diesel Industrial Engine	--	40 < hp ≤ 75	Diesel	1.12	3.03	14.06	0.89	0.96	500.94
Loader	250	Tractor/Loader/Backhoes	2270002066	175 < hp ≤ 300	Diesel	0.78	2.23	6.24	0.005	0.55	536.207
Trenched Pipe Removal Unit	50	Trenchers	2270002030	40 < hp ≤ 75	Diesel	0.294	1.34	4.024	0.013	0.268	535.911
Skid Steer (Bobcat)	50	Skid Steer Loaders	2270002072	40 < hp ≤ 75	Diesel	1.614	8.144	6.667	0.07	1.257	690.94
Equipment Fueled with Propane											
Fork Lift	50	Rough Terrain Forklifts	2270002057	40 < hp ≤ 75	Propane	2.176	69.8	57.5	0.0106	0.696	1995.8

Notes:

*Emission factors are based on similar pieces of equipment used in other environmental impact statements. The emission factors are conservative based on the size (hp) of the equipment. The original factors used in similar projects were obtained from the EPA NONROAD Emissions Model. Propane emission factors are based on natural gas factors found in AP-42, Section 3.2.

Table
Regulated Air Pollutant Emissions from Non-Road Equipment (Decommissioning Phase - Tons/Year)
K Road Moapa Solar LLC Project

Equipment Type	No. of Units*	Equipment Engine Size (hp)	Load	Fuel Type	Estimated Average Daily Usage (hrs/day)	Average Criteria Pollutant Daily Emissions (lbs/day)					Average GHG Daily Emissions (lbs/day)	Total Work Days per Unit	Criteria Pollutant Total Emissions (tons/year)					GHG Total Emissions (metric tons/year)
						VOC	CO	NO_x	SO_2	PM	CO_2		VOC	CO	NO_x	SO_2	PM	CO_2
Equipment Fueled with Diesel																		
Air Compressor	4	50	59	Diesel	10	1.4	6.2	14.6	0.0	1.2	1,394.9	156	0.1	0.5	1.1	0.001	0.1	98.7
Backhoe	4	120	21	Diesel	10	1.7	5.0	13.9	0.0	1.2	1,191.6	156	0.1	0.4	1.1	0.001	0.1	84.3
Compactor	4	120	59	Diesel	10	1.7	9.6	0.0	0.0	2.1	3,347.7	156	0.1	0.7	0.0	0.002	0.2	236.9
Crane large	1	500	43	Diesel	10	1.2	3.7	17.6	0.3	0.8	2,541.5	156	0.1	0.3	1.4	0.02	0.1	179.8
Dozer	2	250	59	Diesel	10	1.6	7.1	21.0	0.3	1.5	3,486.4	156	0.1	0.6	1.6	0.03	0.1	246.7
Generator	5	50	59	Diesel	10	3.6	9.9	45.7	2.9	3.1	1,628.9	156	0.3	0.8	3.6	0.2	0.2	115.3
Grader	2	175	59	Diesel	10	1.6	17.7	19.0	0.2	2.4	2,709.0	156	0.1	1.4	1.5	0.02	0.2	191.7
Light Tower	2	50	59	Diesel	10	1.5	3.9	18.3	1.2	1.2	651.6	156	0.1	0.3	1.4	0.1	0.1	46.1
Loader	5	250	21	Diesel	10	4.5	12.9	36.1	0.0	3.2	3,103.0	156	0.4	1.0	2.8	0.002	0.2	219.6
Trenched Pipe Removal Unit	4	50	59	Diesel	10	0.8	3.5	10.5	0.0	0.7	1,394.1	156	0.1	0.3	0.8	0.003	0.1	98.6
Skid Steer (Bobcat)	4	50	59	Diesel	10	4.2	21.2	17.3	0.2	3.3	1,797.4	156	0.3	1.7	1.4	0.0	0.3	127.2
Equipment Fueled with Propane																		
Fork Lift	4	50	59	Diesel	10	5.7	181.6	149.6	0.0	1.8	5,191.9	156	0.4	14.2	11.7	0.0	0.1	367.4
Total						**29.5**	**282.2**	**363.5**	**5.2**	**22.6**	**28,438.1**	--	**2.3**	**22.0**	**28.4**	**0.4**	**1.8**	**2,012.3**

Notes:
*Number of units is conservative and is based on the greatest amount of units to be used during construction for individual equipment types
**Load is reflective of physical operation of the engine. Engines typically will not be operated at maximum hp for an extended period of time
***Total working days (156 days/year) based on 6 days/week and 26 weeks/year. Decommissioning will take approximately 6 months.

Table C5
On-Road Vehicle Usage/Vehicle Miles Travelled (Decommissioning Phase)
K Road Moapa Solar LLC Project

Vehicle Type	Vehicle Description	Average Number of Vehicles per Day**	Total Working Days***	Total Daily VMT per Unit (VMT/day)*					Total Daily VMT All Units (VMT/day)			Total Overall VMT of All Units (VMT)		
				Unpaved Roads	Paved Roads	Max Daily Onsite	Max Daily Offsite - Paved	Total	Unpaved Roads	Paved Roads	Total	Unpaved Roads	Paved Roads	Total
Heavy Heavy Duty Diesel Trucks	Dump Trucks	10	156	2	8	10	0	10	20	80	100	3,120	12,480	15,600
Diesel Delivery Trucks	Flatbed Truck	10	156	2	8	10	0	10	20	80	100	3,120	12,480	15,600
	General materials Delivery Truck	2	156	2	8	10	100	110	4	216	220	624	33,696	34,320
	Water Delivery Truck	2	156	4	16	20	0	20	8	32	40	1,248	4,992	6,240
Light-Duty Gasoline Vehicles	Staff & Security Truck	5	156	0	30	30	0	30	0	150	150	0	23,400	23,400
	Pickup Truck	10	156	3	27	30	0	30	30	270	300	4,680	42,120	46,800
	Worker Commute Vehicles	100	156	2	8	10	100	110	200	10,800	11,000	31,200	1,684,800	1,716,000
Total				**15**	**105**	**120**	**200**	**320**	**282**	**11,628**	**11,910**	**43,992**	**1,813,968**	**1,857,960**

Notes:
*To estimate paved and unpaved, the max daily onsite distance/vehicle (miles/day) was used. Assumed sealed roads meant paved.
**Number of units is conservative and is based on the greatest amount of units used during construction for individual pieces of equipment.
***Total working days (156 days/year) based on 6 days/week and 26 weeks/year. Decommissioning will take approximately 6 months.

Table
On-Road Vehicle Exhaust Emission Factors (Decommissioning Phase)
K Road Moapa Solar LLC Project

Scenario Year	Equipment Type	Emission Factor* (lb/VMT)							
		VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
2026	Heavy Heavy Duty Diesel Truck	0.00077178	0.00420297	0.00898990	0.00003946	0.00046717	0.00034564	4.19349747	0.00003630
	Diesel Delivery Trucks	0.00088403	0.00569435	0.00589869	0.00002716	0.00027657	0.00020187	2.88298299	0.00003581
	Light-Duty Gasoline Vehicles	0.00042052	0.00328779	0.00027141	0.00001076	0.00009687	0.00006415	1.11105829	0.00003518

Notes:

*Heavy Heavy Duty Diesl Truck Emission Factors based on "Highest (Most Conservative_EMFAC2007 (version 2.3) Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks" (South Coast Air Quality Management District, Scenario Year 2026).

*Delivery Truck and Passenger Vehicle Emission Factors based on "Highest (Most Conservative_EMFAC2007 (version 2.3) Emission Factors for On-Road Passenger Vehicles & Delivery Trucks" (South Coast Air Quality Management District, Scenario Year 2026)

Table C7
On-Road Vehicle Emissions (Decommissioning Phase - Tons/Year)
K Road Moapa Solar LLC Project

Vehicle Type	Average Daily Vehicle Miles Travelled (VMT/day)	Total Criteria Pollutant Emissions (lbs/day)						Total Miles Travelled (VMT)	Total Criteria Pollutant Emissions (tons/year)						Total GHG Emissions (metric tons/year)	
		VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$		VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Heavy Heavy Duty Diesel Truck	100	0.1	0.4	0.9	0.004	0.05	0.03	15,600	0.01	0.03	0.07	0.0003	0.004	0.003	29.7	0.0003
Diesel Delivery Trucks	360	0.3	2.0	2.1	0.01	0.1	0.1	56,160	0.02	0.2	0.2	0.001	0.01	0.01	73.4	0.001
Light-Duty Gasoline Vehicles	11,450	4.8	37.6	3.1	0.1	1.1	0.7	1,786,200	0.4	2.9	0.2	0.01	0.1	0.1	900.2	0.03
Total	--	**5.2**	**40.1**	**6.1**	**0.1**	**1.3**	**0.8**	--	**0.4**	**3.1**	**0.5**	**0.01**	**0.1**	**0.1**	**1,003.3**	**0.03**

Ta

Fugitive Dust Emission Factors - Unpaved/Paved Roads (Decommissioning Phase)
K Road Moapa Solar LLC Project

Unpaved Roads - Emission Factor Derivation

$E = k(s/12)^a(W/3)^b$ AP-42 Section 13.2.2 (11/06 version)

where:

E = particulate emission factor (lb/VMT)
k, a, b = empirical constants for industrial roads
s = surface material silt content (%)
W = average vehicle weight (tons)

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight*	tons	2.9	2.9	Assumption
Constant, k	lb/VMT	1.5	0.15	Table 13.2.2-2 (worst case)
Constant, a		0.9	0.9	Table 13.2.2-2 (worst case)
Constant, b		0.45	0.45	Table 13.2.2-2 (worst case)
Silt Content, s	%	8.5	8.5	Table 13.2.2-1 (construction sites)
Uncontrolled Emission Factor, E	**lb/VMT**	**1.083**	**0.108**	**Calculation**
Control Efficiency for Watering**	%	0.74	0.74	Assumption
Controlled Emission Factor, E	**lb/VMT**	**0.282**	**0.028**	**Calculation**

Notes:

*Mean vehicle weight estimated based on average daily use on site roads (10 heavy duty diesel trucks, 14 diesel delivery trucks, 15 light-duty gasoline trucks and 100 passenger vehicles). Vehicle weights were estimated to be the following: heavy-duty diesel trucks - 12,000 lbs, diesel trucks - 7,500 lbs, and light-duty trucks and passenger vehicles - 5,000 lbs

**Control efficiency for watering taken from WRAP Fugitive Dust Handcook (11/04)

Paved Roads - Emission Factor Derivation

$E = k(sL)^{0.91}(W)^{1.02}$ AP-42 Section 13.2.2 (1/11 version)

where:

E = particulate emission factor (lb/VMT)
k = particle size multiplier
sL = road surface silt loading (g/m^2)
W = average vehicle weight (tons)

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight*	tons	2.5	2.5	Assumption
k factor	lb/VMT	0.0022	0.00054	Table 13.2-1.1
Silt Loading, sL	g/m^2	0.05	0.05	Table 13.2.1-3
Uncontrolled Emission Factor, E**	**lb/VMT**	**0.00037**	**0.00009**	**Calculation**

Notes:

*Mean vehicle weight estimated based on average traffic on Interstate 15 and the majority of traffic is assumed to be light-duty gasoline vehicles/trucks. Light-duty gasoline vehicles/trucks weight an average of 5,000 lbs or 2.5 tons.

** Emission factors was not adjusted to account for the exhaust, brake wear and tire wear factors from EPA's MOBILE6.2 or MOVES2010

Table C9
Fugitive Dust Emissions from On-Road Vehicle Travel on On-Site and Off-Site Roads (Decommissioning Phase)
K Road Moapa Solar LLC Project

Paved Roads						Unpaved Roads						All Roads			
Average Daily Miles Travelled (VMT/day)	Total Miles Travelled on Paved Roads (VMT)	Average Daily Fugitive Dust Emissions (lbs/day)		Total Fugitive Dust Emissions (tons)		Average Daily Miles Travelled (VMT/day)	Total Miles Travelled on Paved Roads (VMT)	Average Daily Fugitive Dust Emissions (lbs/day)		Total Fugitive Dust Emissions (tons)		Average Daily Fugitive Dust Emissions (lbs/day)		Total Fugitive Dust Emissions (tons)	
		PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$			PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
11,628	1,813,968	4.3	1.0	0.3	0.0	282	43,992	79.4	7.9	6.2	0.6	83.7	9.0	6.5	0.6

Tab

Fugitive Dust Emissions from On-Site Decommissioning Activities (Decommissioning Phase)
K Road Moapa Solar LLC Project

Activity	Daily Use		Duration of Activity (days)	Emission Factor*			Average Daily Emissions (lbs/day)		Total Emissions (tons/year)	
	Value	Units		PM_{10}	$PM_{2.5}$	Units	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Bulldozing**	20	hr/day	156	2.464	1.11	lb/hr	49.3	22.2	3.8	1.7
Grading***	200	VMT/day	156	1.071	0.137	lb/VMT	214.2	27.4	16.7	2.1
Total							**263.5**	**49.6**	**20.6**	**3.9**

Notes:
*See emission factor derivations below
**Daily construction use of 20 hrs/day based on 2 dozers operating 10 hrs/day
***Daily construction use of 200 VMT/day based on 2 graders operating for 10 hours/day at 10 miles per hour

Bulldozing and Grading Emission Factor Derivation

Activity	Emission Factor Units	Uncontrolled Emission Factor		Controlled Emission Factor*	
		PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Bulldozing**	lb/hr	7.04	3.17	2.464	1.11
Grading***	lb/VMT	3.06	0.392	1.071	0.137

Notes:
*Assume 65% dust control factor based on as-needed watering
**Emission factors from AP-42 Section 11.9, Table 11.9-1 (Bulldozing-Overburden). Assume silt content of 8.5% and moisture content of 2%
***Emission factors from AP-42 Section 11.9, Table 11.9-1 (Grading). Assume vehicle speed of 10 miles per hour

This page intended to be blank.

Appendix J

Biological Assessment – Section 7 Consultation under ESA

This page intended to be blank.

Biological Assessment For The K Road Moapa Solar Generation Facility Clark County, Nevada

Amended

JANUARY 2012

Prepared for:

BUREAU OF INDIAN AFFAIRS,
BUREAU OF LAND MANAGEMENT AND
U.S. FISH AND WILDLIFE SERVICE

On behalf of:

The Moapa Band of Paiutes

Report Prepared By:

ARCADIS-US, Inc.

6923001

This page intended to be blank.

Contents

Executive Summary 1

1. Introduction 1-1

1.1. Purpose and Need 1-1

2. Project Description 2-1

2.1. Project Location 2-1

2.2. Definition of Biological Assessment Area 2-3

2.3. Proposed Action 2-3

2.3.1. Best Management Practices 2-9

2.3.2. Avoidance, Minimization, Mitigation, and Monitoring 2-10

2.3.3. Construction Monitoring 2-10

2.3.4. Focused Mitigation for Desert Tortoise 2-11

2.4. Consultation History 2-12

3. Environmental Baseline 3-1

3.1. Biological Setting 3-1

3.1.1. Vegetation Communities Present 3-2

3.1.1.1. Mojave Creosote Bush Scrub 3-2

3.1.1.2. Un-Vegetated Habitat 3-2

3.2. Soils 3-2

3.2.1. Soil Series 3-4

3.2.1.1. Tonopah Series 3-4

3.2.1.2. Bard Series 3-4

3.2.1.3. Badland Series 3-4

3.2.1.4. Mormon Mesa Series 3-4

3.3. Water Resources 3-4

3.4. Topography / Geology 3-5

4. Description of Species 4-1

4.1. Endangered, Threatened, Proposed, or Candidate Species removed from further consideration 4-1

4.1.1. Mt. Charleston Blue Butterfly 4-1

4.1.2. Pahrump Poolfish 4-2

4.1.3. Lahontan Cutthroat Trout 4-2

4.1.4. Woundfin 4-2

4.1.5. Bonytail Chub 4-2

4.1.6. Virgin River Chub 4-2

4.1.7. Razorback Sucker 4-2

4.1.8. Yuma Clapper Rail 4-3

4.1.9. Yellow-billed Cuckoo 4-3

4.1.10. Southwestern Willow Flycatcher 4-4

4.1.11. Golden Eagle 4-4

4.1.12. Relict Leopard Frog 4-5

4.1.13. Las Vegas Buckwheat 4-5

4.2. Moapa Dace 4-6
4.2.1. Species Description 4-6
4.2.2. Distribution and Life History 4-7
4.2.3. Species Status in the Proposed Project Area 4-7
4.2.4. Threats to the Species 4-8
4.2.5. Critical Habitat 4-11
4.3. Desert Tortoise 4-11
4.3.1. Species Description 4-12
4.3.2. Distribution and Life History 4-12
4.3.3. Species Status in the Proposed Project Area 4-14
4.3.4. Threats to the Species 4-14
4.3.5. Protocol Survey Methodology 4-16
4.3.6. Protocol Survey Results 4-17
4.3.7. Critical Habitat 4-15

5. Effects of the Action 5-1

5.1. Impacts on Desert Tortoise, Moapa Dace, and Golden Eagle 5-1
5.1.1. Estimate of Incidental Take 5-1
5.1.2. Loss of Occupied Habitat 5-3
5.1.3. Constriction of Movement 5-3
5.1.4. Vibration 5-4
5.1.5. Dust 5-4
5.1.6. Temporary Loss of Desert Tortoise Territory 5-4
5.1.7. Noise and Lighting 5-6
5.1.8. Edge Effects 5-7
5.1.9. Introduction of Weeds and Invasive Species 5-7
5.1.10. Attraction of Human Subsidized Predators 5-8
5.2. Cumulative Effects Analysis 5-8

6. Determination of Effect 6-1

7. References 7-1

List of Tables

Table 3-1. Groundwater Basin Characteristics 3-5
Table 4-1: Survey Results 4-17
Table 5-1: Impacts from the Proposed Project 5-5

List of Figures

Figure 2-1: Project Location 2-2
Figure 2-2: Biological Assessment Area 2-4
Figure 2-3: Desert Tortoise Relocation Area 2-8
Figure 3-1: Sparsely Vegetated Areas and Cliff Features 3-3
Figure 4-1: Desert Tortoise Survey Results 4-14

Appendices

A. Photographic log
B. Clark County Threatened and Endangered Species List

Acronyms Used in the Report

ABPP	Avian and Bat Protection Plan
ACEC	Areas of Critical Environmental Concern
acft	Acre-feet
AFY	acre feet a year
APP	Avian Protection Plan
BGEPA	Bald and Golden Eagle Protection Act
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
Blvd.	Boulevard
BMPs	Best Management Practices
cm	centimeter
CSP	concentrating solar power
dBA	decibel
DOT	Department of Transportation
DWMA	Desert Wildlife Management Area
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
Ft/sec	feet per second
GIS	Geographic Information System
GPS	Global Positioning System
GHG	Greenhouse Gas
K Road	K Road Moapa Solar LLC
kV	kilovolt
MBTA	Migratory Bird Treaty Act
m	meter
mm	millimeters
mph	miles per hour
MW	Megawatt
MVWD	Moapa Valley Water District
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NFRC	National fisheries Research Center
NEPA	National Environmental Policy Act
NPC	Nevada Power
NRCS	National Resources Conservation Service
NWR	National Wildlife Refuge
O&M	Operations and Maintenance

POD	Plan of Development
PPA	Power Purchase Agreement
PV	Photovoltaic
Reservation	Moapa River Reservation
ROW	Right(s) of Way
RPS	Renewable Portfolio Standard
SWIP	Southwest Intertie Project
SWPPP	Storm Water Pollution Prevention Plan
Travel Plaza	Moapa Travel Plaza
Tribe	Moapa Band of Paiute Indians
URTD	Upper Respiratory Tract Disease
U.S.	United States
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USFS	U.S. Forest Service
WSA	Wilderness Study Areas
°C	degrees Centigrade
°F	degrees Fahrenheit

This page intended to be blank.

Executive Summary

K Road Moapa Solar LLC (K Road), the Applicant, has entered into an agreement with the Moapa Band of Paiute Indians (Tribe) to lease land on the Moapa River Reservation (Reservation) held in Trust for the purposes of constructing and operating a 350 megawatt (MW) photovoltaic (PV) solar generating station and associated infrastructure (the Proposed Project). The Tribe is recognized under a Constitution approved by the Secretary of the Interior on April 17, 1942. The tribal lands originally set aside in 1874 consisted of two million acres, but in 1876 it was reduced to a thousand acres. In December 1980, under the Carter Administration, an additional 70,000 acres were provided. The current total land base is 71,954 acres.

The Proposed Project would be located within the Reservation and partially upon Bureau of Land Management (BLM) lands. The solar facility will be located on 2,000 acres wholly within the Reservation as well as approximately 6,000 acres for the desert tortoise relocation area. The other acreage involved is approximately 224 acres comprised of the 500 kilovolt (kV) transmission line, an approximately 5-mile access road (16 to 24 width), a 1-mile long water pipeline and a 3-mile 12 kV transmission line connecting the solar field substation to the Moapa Travel Plaza (Travel Plaza) on the east side of the Interstate 15 (I-15). The portion of the proposed project on BLM lands is approximately 12 acres of right-of-way (ROW) for the transmission line. The total acreage involved with the proposed project would be approximately 8,224 acres.

The Proposed Project is dependent upon approval by the Bureau of Indian Affairs (BIA) of a solar energy ground lease and associated agreements for ROW solely on Reservation land entered into between the Tribe and K Road (the Lease). The BLM will also have a proposed action for the proposed access road and the 500kV Transmission line ROW located on BLM land as well as Reservation land managed by the BLM (existing BLM 4,000 foot wide utility corridor). The BIA will act as the lead agency and therefore enter into Section 7 Consultation with the United States Fish and Wildlife Service (USFWS) for incidental take of the threatened desert tortoise (*Gopherus agassizii*) and potential impacts to Golden Eagles protected under the Bald and Golden Eagle Protection Act (BGEPA).

The 10 species listed under the Endangered Species Act (ESA) (1974), four candidates for listing under the ESA, and one species protected by the BGEPA that are the focus of this assessment include: 1 invertebrate, 1 reptile, 7 fish, 1 amphibian, 3 birds, and 1 plant species (species believe extirpated from Clark County were not included). All species except for the desert tortoise and Golden Eagle were considered to be not found on site

or, no substantial habitat was present on site. Potential impacts were evaluated for indirect impacts caused by groundwater withdrawals to the Moapa dace.

Desert tortoise surveys were conducted between October 11, 2010 and October 20, 2010. East/West transects were overlain on the 2,000 acre proposed solar facility of land using a Geographical Information System (GIS). Each transect was of varying length due to the shape of the solar facility boundary; however, all were plotted 10 meters apart and parallel. In total, 300 transects were utilized to obtain 100 percent coverage of the 2,000 acre area. A total of 502 miles of transect were walked within the solar facility 2,000 acre boundary. Additional transects were completed within the 200-feet-wide corridor along the alternative transmission line route and water pipeline route. The preferred alignment for the 500kV transmission line is within the existing 4,000-feet-wide utility corridor that is located mostly on the Reservation, but administered by the BLM, but also partly located on BLM land for 0.5 miles from the southern Reservation boundary. The utility corridor is utilized frequently by multiple utility owners and the Tribe. The preferred transmission line route and preferred water line route has not been surveyed but is assumed to have less desert tortoise use due to frequent use and habitat/vegetation depletion. These ROWs will be surveyed and mapped in October 2011 for incorporation into the Biological Opinion.

Winter rainfall for the 2009 winter season for North Vegas (Station 265705) was 1.78 inches according to the Western Regional Climate Center. Using the USFWS guidance document (2010), protocol and population estimate equation, the total population of adult desert tortoise within the 2,000 acre solar facility boundary is estimated to be approximately fifty-one (51) animals. The lower and higher 95% confidence interval for the estimate of tortoise abundance within the solar facility boundary (Buckland et al. 2001) is approximately 25 to 103, respectively.

The implementation of the Proposed Project is likely to have an adverse effect on the desert tortoise. Take would occur in the form of harassment, potential mortality, and loss of occupied habitat. Implementation of a Translocation Plan, Avian and Bat Protection Plan (ABPP) and exclusionary fencing is intended to minimize direct mortality and reduce depredation of desert tortoise. Based on the amount of suitable habitat that would be impacted and estimated population based on 100 percent desert tortoise surveys conducted in the proposed solar facility boundary, approximately 51 desert tortoise and 2,224 (2,000 acres permanent) acres of potential tortoise habitat may be affected by the Proposed Project.

The Golden Eagle has been determined, through 2009 Nevada Department of Wildlife (NDOW) aerial surveys, to have remnant or historical nests within the Arrowhead Canyon Range approximately 8-10 miles from the Proposed Project site. The Proposed

Project is likely to have minimal or no affect upon Golden Eagles due to the distance to suspected nesting locations and loss of only 2,000 acres of potential foraging area.

Moapa dace currently inhabit approximately 6 miles of stream habitat within five spring systems and the upper Muddy River. In the Muddy River, their range extends to approximately 1,000 ft downstream of the Warm Springs Road bridge. The fifth spring system originates on Moapa Valley National Wildlife Refuge (NWR), but the outflow (Refuge stream) flows through private land before reaching the Muddy River. The closest known location for the Moapa dace to the Proposed Project is over 13 miles away. Given the small amount of water (72 Acre Feet a Year (AFY)) required, the groundwater levels in the area would not be impacted. Therefore, the Proposed Project is likely to have minimal or no affect on the Moapa dace.

1. Introduction

This Biological Assessment has been prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (ESA) (16 United States Code [U.S.C.] 1536(c)) to address potential effects of the Proposed Project on federally listed threatened and endangered species and their designated critical habitat. Specifically, this Biological Assessment addresses the potential effects associated with the construction, operation, and maintenance of the Proposed Project on the desert tortoise (*Gopherus agassizii*) a federally listed species and the Golden Eagle, protected under the Migratory Bird Treaty Act (MBTA) and the BGEPA.

The BIA and BLM are also the lead federal agencies for National Environmental Policy Act (NEPA) compliance and an Environmental Impact Statement (EIS) is being prepared concurrent with this Biological Assessment.

The Proposed Project site was selected due to its high solar insolation, relatively flat terrain, and contiguous acreage that are in close proximity to existing infrastructure. Facilities located within the solar facility boundary would occupy a footprint of approximately 2,000 acres and would include PV modules, power blocks, an office and maintenance building, parking area, lay-down area, switchyard, and a wastewater evaporation/detention pond.

1.1. Purpose and Need

The State of Nevada and California has established a Renewable Portfolio Standard (RPS) that all public utilities must meet by investing in, and partnering with, commercial project developers to purchase renewable generated power, and participate in turnkey projects and/or co-development of renewable projects. The RPS mandates that 25 percent of retail sales come from renewable resources by 2025. The mandate in the state of California is 33 percent. It is expected that at least 1,000 MW of new solar power will be required annually to meet this need in Nevada and 13,000 MW in California; both could be serviced by this Proposed Project.

The primary purpose of the Proposed Project is to provide economic development, sustainable renewable resources, new jobs and other benefits for the Tribe by using the Tribe's solar resources. Secondarily, the Proposed Project will assist utilities in meeting their renewable energy goals by providing clean renewable electricity generation from the Tribe's solar resources that may be efficiently connected to existing transmission lines in a manner that minimizes adverse site impacts.

The Nevada portion of the Dry Lake Valley was selected due to its solar resource, the availability of suitable land, transmission accessibility, and absence of land use

constraints (i.e., Desert Wildlife Management Areas (DWMAs), Areas of Critical Environmental Concern [ACECs], designated Wilderness Areas, Wilderness Study Areas [WSAs], and other restrictive land use designations).

The site of the Proposed Project would minimize environmental impacts, infrastructure needs, and costs by being located near existing infrastructure. The Proposed Project would contribute to the local economy by creating employment opportunities, provide the Tribe accessible energy transmission infrastructure, generate rental and other income for the tribe, and facilitate expenditures in local businesses.

The Proposed Project would further the objectives of the federal government to eliminate or reduce greenhouse gas (GHG) emissions and promote the deployment of renewable energy technologies. In addition, the Proposed Project also would help displace older fossil-fuel electric generating facilities with clean, renewable power, which would contribute to the reduction of GHG emissions.

2. Project Description

The Applicant has entered into an agreement with the Tribe to lease Reservation land for the purpose of constructing a PV solar generating station on approximately 2,000 acres of land within the Reservation in Clark County, Nevada. The Applicant has also applied for ROW agreements with the BLM for a 500kV transmission line and improvement of an existing access road.

The optimum site was selected based on the results of a preliminary site survey as well as the NEPA EIS process using Best Practice and object reasoning techniques. The results of the evaluation process identified the parcel of land closest to the Crystal substation (Figure 2-1) aligned most optimally with the major criteria used in the preliminary survey effort.

The Proposed Project would be built in three phases. The first phase would consist of the construction and operation of an approximate 150MW solar plant including associated facilities. The electricity generated from this plant will be sold to market via a Power Purchase Agreement (PPA). The facility will utilize transformers to step up the voltage to interconnection voltage to facilitate a connection of the facility with one or more of the following: an existing transmission line on tribal lands (up to 500 kV), the existing 230 kV Crystal Substation operated by NV Energy outside tribal lands, and/or the existing 500 kV Crystal Substation located outside tribal lands.

The Proposed Project includes BLM approval of an electric transmission and access road ROWs within an existing utility corridor, 4.5 miles of which is located on the Reservation and 0.5 miles of which is located on BLM land just south of the Reservation boundary. This ROW is in Township 17 South, Range 64 East, Section 10, and Township 16 South, Range 64 East, Sections 33, 27, 23 and 13. The construction of the Proposed Project and the 500kV transmission line will provide the Tribe with the opportunity to connect its Travel Plaza with the transmission grid via the construction of a 12kV transmission line that will connect directly to the solar facility substation.

2.1. Project Location

The Proposed Project is located on approximately 2,224 acres of land within the Basin and Range physiographic province in the north central portion of the Mojave Desert. Basin and Range structure in the Mojave Desert is characterized by rather abrupt mountain ranges, generally of moderate height, that consist primarily of exposed bedrock that is deeply cut by ravines, and is surrounded

MALCOLM PIRNIE

K Road Power
San Diego, California

K Road Moapa Solar Project

Moapa River Indian Reservation

Project Location

MALCOLM PIRNIE, INC.

Sept. 2011

FIGURE 2-1

Map Document:Austin/6923001/GIS/MXD/BLM Lands Figure 1

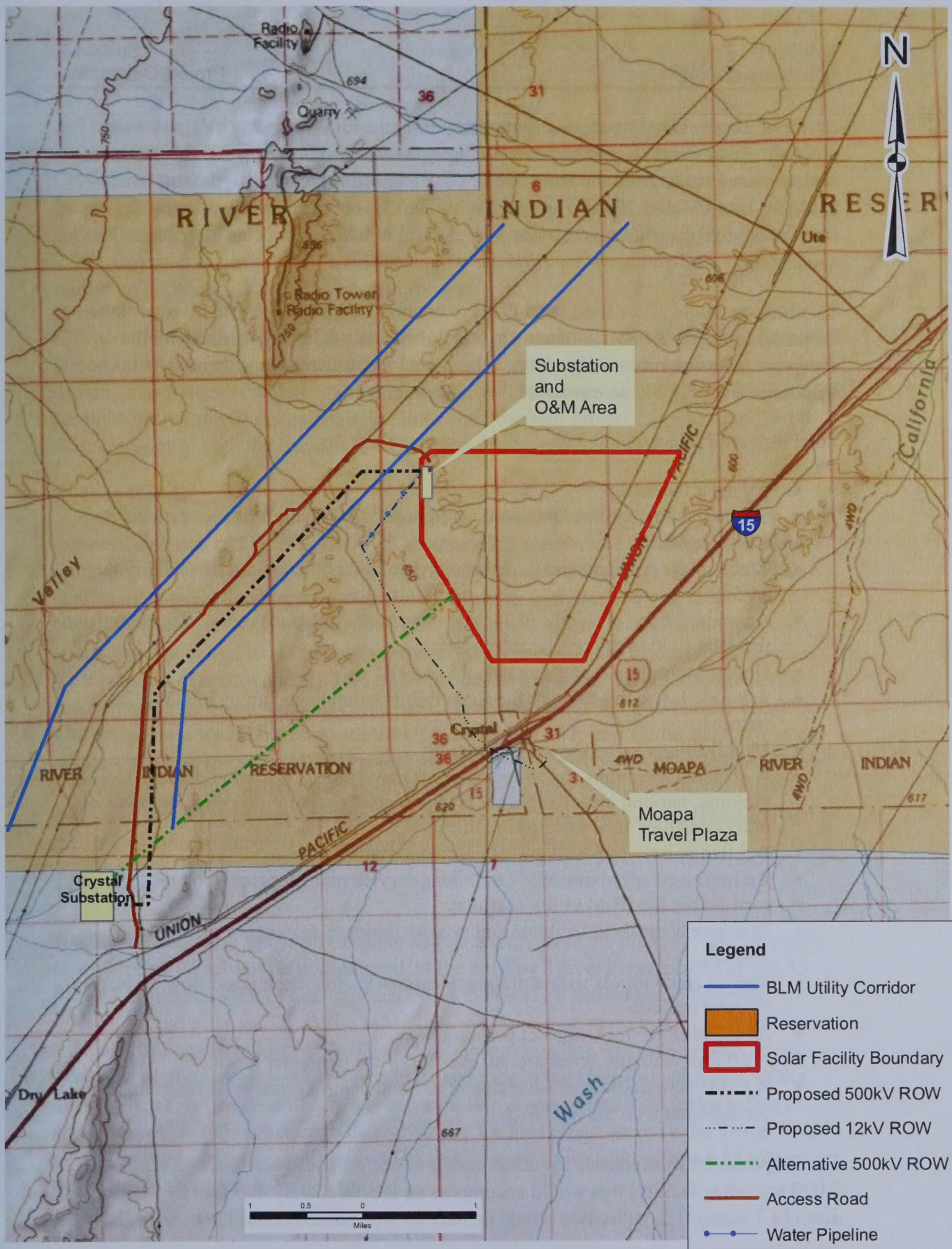
by aprons of pediments and/or low-profile bajada slopes, which drain to interior closed basins. This interior drainage with no outlets results in the formation of evaporite playa lakes, such as Dry Lake south of the Proposed Project, in the valley bottoms (Benson and Darrow 1981; Longwell et al. 1965). The Proposed Project is situated in the north end of the Dry Lake Valley. The mountains bounding the Dry Lake Valley include the Arrow Canyon Range to the west, Dry Lake Range to the south and North Muddy Mountains to the east. The Arrow Canyon Range is comprised primarily of carbonate rocks of the Bird Spring Formation that are Ordovician to Permian in age (Longwell et al. 1965; Stewart and Carlson 1977). Elevations of the Proposed Project range from approximately 2,038 feet at the intersection of the main Proposed Project access road at Interstate Highway 15 to 3,089 feet at the highest point on the mesa.

2.2. Definition of Biological Assessment Area

The Proposed Project is located on approximately 2,212 acres of land within the Reservation and 12 acres on BLM land within the utility corridor (total of 2,224 acres). For the purpose of this Biological Assessment, an approximate 5.0 mile in length electric transmission line corridor (200 feet wide), an approximate 4.0 mile alternative 500kV electric transmission line, an approximate 1 mile in length water pipeline corridor (25 feet wide) and an approximate 3-mile 12kV transmission line (25 feet wide) to the Moapa Travel Plaza are included as the "Biological Assessment Area" (Figure 2-2). Access to the Proposed Project is via an existing utility road from North Las Vegas Boulevard upgraded to approximately 16-24 feet in width and is wholly within the existing BLM utility corridor for the exception of the northern terminal end where it deviates east to enter the proposed solar facility. The Biological Assessment Area will include the expansion of the existing access road, the 6,000 acre desert tortoise relocation area and the control area, yet to be determined. In addition, California Wash hydrographic basin was included for potential groundwater impacts.

2.3. Proposed Action

BIA's Proposed Action is approval of the Lease and associated ROWs (access road, 500kV transmission line, 12kV transmission line, and water pipeline) wholly within the Reservation. BLM's Proposed Action is the approval of ROWs for the 500kV transmission line and access road within the 4,000 feet wide BLM managed utility corridor. The Tribe proposes to establish recipient and control sites for translocation of displaced desert tortoises. Collectively, these Proposed Actions make up the Proposed Project. The Proposed Project consists of the construction, operation, and maintenance of up to 350 MW of capacity of a solar power generating facility and establishment of desert tortoise translocation areas. The Proposed Project components would be built in three phases (as described below), and would ultimately send electricity to the Crystal Substation. Primary components would include the access road, onsite substation, onsite operations and maintenance area, perimeter fence (potentially in phases), stormwater



MALCOLM PIRNIE

K Road Power
San Diego, California

K Road Moapa Solar Project

Moapa River Indian Reservation

Biological Assessment Area

MALCOLM PIRNIE, INC.

Sept. 2011

FIGURE 2-2

Map Document:Austin\6923001\GIS\MXD\BLM Lands Figure 1

devices (berms and gabions), electric transmission line (500kV and 12kV), and water pipeline. Solar panels would be added in three phases as well as associated components such as transformers from the north end of the Proposed Project site to the south in 150MW, 100MW, and 100MW, respectively. A 12kV transmission line that will link the Proposed Project substation to the Travel Plaza will be constructed after Phase I is completed.

This linkage would allow the Travel Plaza to connect to the electric grid by way of the Proposed Project's 500kV tie-line to Crystal Substation. All components, with the exception of power transmission lines, access road and water pipeline, would be housed within the fenced 2,000 acre solar facility boundary.

The Proposed Project would include the following elements:

- PV solar modules;
- Single tracking systems mounted on embedded pier ballast or foundations;
- Power inverters;
- Three-phase pad mounted transformers that convert the output of each inverter to 34.5 kV;
- An underground or overhead 34.5kV collection system to convey electricity from the solar field to the on-site substation;
- On-site substation (approximately 15 acres);
- A 5-mile Interconnection to the Crystal Substation via an up to 500kV transmission line;
- Modifications to the Crystal Substation
- A 40 acre Operations and Maintenance (O&M) area to accommodate the O&M building, parking area, temporary laydown area, evaporation/detention pond, and other construction associated facilities;
- A 5.0 mile interior paved/gravel perimeter maintenance road;
- An improved approximately 7 mile long service road along existing unimproved road within the BLM utility corridor;
- Drainage controls to facilitate and/or slow drainage to existing ephemeral washes;
- Stormwater controls within drainage features to slow flash flood flow to nearby railroad culverts;
- Approximately 7.14 miles of perimeter fence;
- A 20-foot wide fire break around exterior of the perimeter fence;
- A 6,000-acre desert tortoise recipient site and control areas to be determined in consultation with the USFWS

The Proposed Project includes the construction of one on-site substation (within the 2,000 acre solar facility) that would encompass an approximately 800-foot by 800-foot area (14.7 acres). The substation would include an uninhabited control house, medium-

and high-voltage switchgear and conductor structures, and up to three transformers (approximately 50 feet wide by 25 feet long by 20 feet high each). Additionally, the Crystal substation would be upgraded to accommodate equipment required to connect the Proposed Project to the energy grid. No additional acreage outside of the fenced substation is suspected to take place. Clearing and grubbing would take place within the 2,000 acre solar facility for PV module installation; however, would be kept to a minimum as practical for engineering purposes.

The up to 500kV transmission lines would be single circuit and supported on galvanized lattice structures or color-treated steel poles/towers. Although final transmission line design has not been completed, an estimated 23 steel structures would likely be required for the construction of the transmission line. The Proposed Project has been designed to deliver power to both the Nevada and California energy market.

Access Roads

Access to the site will be via exit 64 off Interstate 15, west bound on Hwy 93, and an immediate turn on Las Vegas Boulevard, a state maintained frontage road. Las Vegas Boulevard is well paved for approximately 5.74 miles from the I-15 exit to the end of Nevada Department of Transportation (DOT) maintenance and jurisdiction. From there an unimproved paved road continues towards the Crystal substation to a left hand or northerly turn at approximately 1.96 miles. Once leaving the paved portion, the access road becomes an improved utility road within the 4,000-feet wide BLM utility corridor. The access road would be improved from 16- to 24-feet wide and would terminate at the northwest corner of the Proposed Project solar facility. The access road is approximately 5.90 miles to the boundary access point where an improved ½ mile entrance onto the mesa would need to be constructed. There is public access to the Crystal substation and to the Reservation boundary 0.5 miles north of Crystal substation.

12kV Transmission Line

A 12kV transmission line is proposed to deliver energy from the main transmission grid, to which Crystal substation is connected, to the existing Travel Plaza located at exit 75 off I-15, south and west of the Proposed Project. The 12kV transmission line will originate at the solar facility onsite substation and travel southwest until it reaches the existing 10-inch water line ROW. The 12kV transmission line will then parallel this existing waterline along wooden poles to its endpoint at the electrical substation of the Travel Plaza. The proposed 12kV transmission line is approximately 3 miles in length and will provide infrastructure to deliver energy for the current needs of the Travel Plaza as well as future improvements and additions. Crossing of the railroad and I-15 (above or below ground) has yet to be determined.

Construction Workforce

The onsite construction workforce would consist of scientists, laborers, craftsmen, supervisory personnel and construction management personnel. In total there will be approximately 250-300 workers onsite, on average. There could be as many as 400 workers onsite during the high peak of construction activities.

Construction will occur six days a week for an estimated 10 hours per day. Additional hours may be necessary to make up for schedule and weather delays. Due to extreme heat during summer months, cement crews (for example), may need to work during night time hours to avoid extreme heat that would complicate curing and drying of cement.

Construction Sequencing

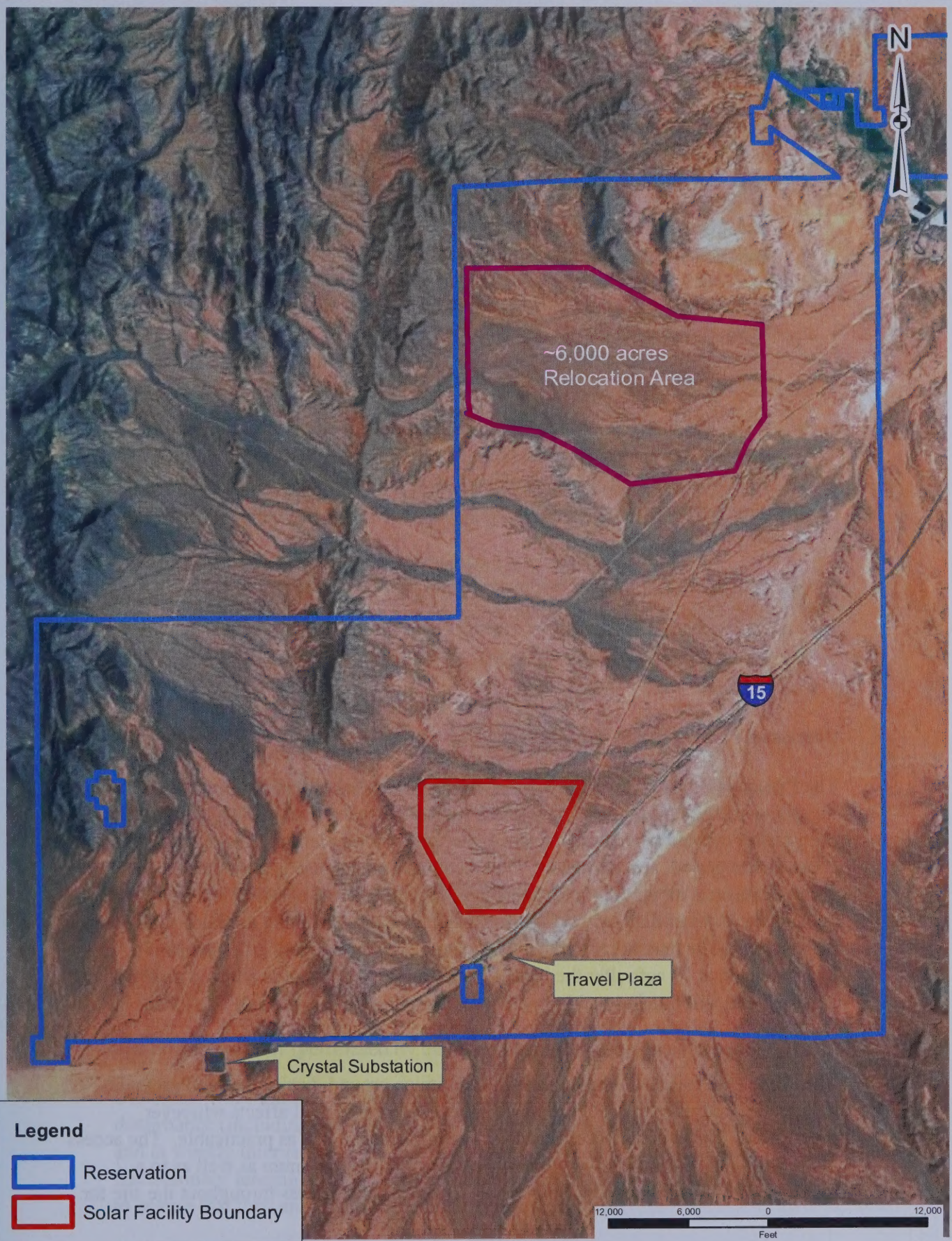
Environmental clearance activities including desert tortoise surveys would be performed primarily before the onset of Phase I construction; however, environmental monitors would be in place during the entire construction period to minimize impacts to natural resources, focusing on access roads after the solar facility site is completely fenced. During the environmental clearance stage trained biologists would survey and relocate desert tortoise and perform any sensitive species mitigation. Desert tortoise would be translocated to an approximate 6,000 acre area within the Reservation (Figure 2-3). The relocation area will be surveyed in October 2011 to determine current density of desert tortoise at the site. Activities associated with relocation (temporary) and translocation (permanent) of desert tortoise would follow guidelines outlined in the Translocation Plan and Biological Opinion completed by the USFWS. Tortoise fencing would be installed around the entire 2,000 acre solar facility prior to translocation to ensure no influx of desert tortoise into the site.

Temporary Construction Fencing

Temporary construction fencing may be used in areas where tortoises are abundant as determined during the preliminary construction period by authorized biologists. Temporary fencing would be of wire cloth or similar to silt fencing and would be buried into the ground to deter burrowing tortoises from crossing the access road or transmission line corridor.

Site Access and Laydown Area

Following the environmental clearance for the access road and completion of either partial or full desert tortoise fencing of the Proposed Project site, the activities to upgrade the road and prepare the laydown area (parking, O&M area, substation) would begin. These activities described below would only occur during Phase I of the construction process and would not be repeated for Phase II and III.



MALCOLM PIRNIE

KRoad Power
San Diego, California

KRoad Moapa Solar Project

Moapa Reservation

Proposed Desert Tortoise Relocation Area

MALCOLM PIRNIE, INC.

Sept. 2011

FIGURE 2-3

Map Document: (S:\GIS_Resources\Standards_Guidelines\MapTemplates\GIS_TEMPLATES_2005\11X8.5_Portrait.mxt)
7/19/2005 – 5:12:41 PM

- The access road along Las Vegas Boulevard where state maintenance ends may be upgraded or improved with pavement to allow safe travel of large vehicles as well as hold up to daily traffic loads and weight.
- The area would be cleared and grubbed of vegetation. Organic matter would be mulched on-site or hauled to the Moapa compost facility located nearby.
- The access road would be widened and improved according to the Plan of Development (POD) approved the BLM.
- Construction entrance and exit gates would be established.
- A tire wash area would be established near the Crystal Substation prior to entering the reservation to prevent soil and material from leaving the Proposed Project site and to maintain clean access along Las Vegas Boulevard as well as limit the introduction of weeds and invasive species onto the reservation. The water will be supplied via a water truck.
- Equipment storage and laydown areas would be compacted to aid in dust suppression and the perimeter would be staked and marked with signs.
- The main facility road would be prepared with aggregate or similar road base material.

Proposed Project Water Supply

The Proposed Project would require approximately 380 acre-feet (acft) of water during the proposed five-year construction phase (72 acft/year for five years) and up to 40 acft per year for operations and maintenance after project completion. During the construction period, approximately 95 percent of the water use is attributed to dust control measures along the access road and within the active construction site. A small percentage of water may be used for personnel needs and cleaning modules soiled during construction. The maximum volume of construction water in any given year is approximated at 72 acft. Per the lease agreement, the Applicant is allowed up to 50 acft/year and will purchase additional water from the Tribe if needed.

2.3.1. Best Management Practices

The Proposed Project will be designed to minimize ground disturbance and ground disturbance activities in order to reduce adverse environmental affects wherever practicable. The existing access road will be utilized as much as practicable. The access roads within the solar facility boundary will be kept to a minimum as well as to a minimum width and located in such a way to allow quick access throughout the site for

construction, maintenance, and operations. Water trucks will be used to minimize dust during construction.

The majority of the site would drain naturally as sheet flow to the existing large, ephemeral drainage features found on site. The drainage plan would use berm-like structures to slow excessive runoff on the eastern side of the site where elevations decrease and flatten prior to discharge under multiple culverts placed within the existing railroad levee. Given the caliche soil and rock cliffs prevalent through most major drainage areas, the use of rock weir structures may be utilized to slow flash flood flow prior to discharge under the existing railroad culverts to ensure no structural damage. No offsite drainage enters the mesa or the proposed solar facility, therefore only surface sheet flow from the improved areas will need to be accounted for to ensure safe and natural discharge of stormwater.

On-site vegetation will be cleared only when required for construction of roads, PV modules, electrical equipment and for safety reasons.

2.3.2. Avoidance, Minimization, Mitigation, and Monitoring

The following sections summarize measures being proposed by the Applicant to avoid, minimize, and/or compensate for the potential impacts of the Proposed Project on the desert tortoise. These measures may be modified and/or supplemented based on discussions with the various permitting agencies (i.e., during the consultation process with USFWS or during the NEPA process with the BIA).

2.3.3. Construction Monitoring

The Applicant will provide construction monitoring under the direction of biologists approved by the USFWS. The biologists will be given authority to supervise the functions listed below.

- Oversee establishment and functionality of sediment control devices as outlined in the Storm Water Pollution Prevention Plan (SWPPP). Ensure that Best Management Practices (BMPs) are in place and working properly on a weekly basis.

- Awareness training for desert tortoise will be provided to all construction crews and operations staff (performed by qualified personnel only).

- Biologists will monitor the construction activities daily during the initial site disturbance (including installation of permanent desert tortoise exclusion fencing) and at weekly intervals after all tortoises have been removed from the site. Exclusionary fencing will be checked monthly and after any substantial rain event to ensure that they are effective barriers for desert tortoise.

- Implement controls at entry locations to facilitate weed management and invasive species control in order to minimize infestation to the Proposed Project area from an outside source. Trucks and other large equipment should be randomly checked before entering the site for any invasive species debris or seed.

2.3.4. Focused Mitigation for Desert Tortoise

The following conservation measures will be performed by the Applicant.

- A desert tortoise Translocation Plan shall be developed, reviewed and accepted by the BIA and Tribe, and be approved by USFWS prior to issuance of a Biological Opinion. This plan will include the following details at a minimum: translocation protocol; health assessment protocol for all tortoise and disease testing of individuals that will be translocated greater than 500 meters; translocation and control area habitat assessment and suitability; assessment of desert tortoise population and health in the area receiving translocated tortoise; and preparation of a disposition plan for relocated animals.

- Pre-construction surveys will be conducted to test all desert tortoises that will be translocated. Testing will entail bloodwork to determine whether any desert tortoises suffer from upper respiratory tract disease (URTD) and will include radio tagging each desert tortoise found to aid in relocation during pre-construction clearance surveys.

- A permanent perimeter, exclusionary fence, approximately 7.14 miles in length, will be constructed around the solar facility boundary in occupied desert tortoise habitat. Pre-construction clearance surveys to remove tortoise from the construction area will be conducted following USFWS protocol (2011a). Construction of the exclusionary fence will be monitored by a qualified biologist in order to eliminate impacts to tortoise burrows or live tortoises.

- Roving biological monitors to monitor the various construction crews in the active construction areas will be assigned until 100% tortoise clearance is confirmed. Biological monitoring would also occur during access road improvements in occupied desert tortoise habitat.

- Mitigation for permanent impacts to desert tortoise habitat would occur through an acreage-based compensatory mitigation formula developed in consultation with USFWS. Compensatory mitigation includes payment into a Tribal conservation fund at a rate of $786 per acre. These funds will be utilized for desert tortoise recovery actions agreed upon via the Applicant and Tribe lease agreement as well as the BIA and USFWS.

- A biological monitor must be present during maintenance activities if occurring in occupied desert tortoise habitat located outside of the perimeter fence. Pre-

maintenance clearance surveys followed by temporary exclusionary fencing may also be required in occupied desert tortoise habitat, if the maintenance action requires ground or vegetation disturbance.

- Speed limits within the Proposed Project area will be restricted to less than 25 miles per hour (mph) during construction and operation.

- Lighting will be focused in toward the solar facility and downward to avoid lighting habitats beyond the Proposed Project perimeter.

- Monitoring for the presence of ravens and other potential human subsidized predators of special status wildlife will be conducted and a control plan will be implemented if predator densities substantially increase in the vicinity of the facility. BMPs to discourage the presence of ravens onsite include trash management, elimination of available water sources, designing structures to discourage potential nest sites, use of hazing to discourage raven presence, and active monitoring of the site for presence of ravens.

- A Weed Management Plan, which must be approved by the USFWS, BIA, BLM and the Tribe will be implemented prior to the initiation of ground disturbing activities. Mitigation measures in the Weed Management Plan include: worker awareness training; limiting ground disturbance to designated areas only; maintenance of vehicle wash and inspection stations and close monitoring of materials brought onto the site to minimize the potential for weed introduction; re-establishment of native vegetation in disturbed areas to prevent weeds from colonizing newly disturbed areas; and, regularly scheduled monitoring to quickly detect new infestations of weeds, coupled with rapid implementation of control measures to prevent further infiltration.

2.4. Consultation History

Early informal consultation between the Proposed Project team and USFWS took place in October 2010. The early discussions outlined desert tortoise protocol surveys for presence/absence of animals on the 2,000 acre solar facility and associated utility corridors.

Discussion with the Tribe took place in early October 2010, prior to the biological survey of the 2,000 acre solar facility and associated features. The Applicant and consultant met with the Chairman (Darren Daboda) to discuss access, safety, and protocol for documenting cultural resource artifacts during the biological survey.

Discussion took place in April/May 2011 with Christy Klinger (NDOW) and Michael Burroughs and Leilani Takano of USFWS to determine if aerial surveys for Golden

Eagles would be required. It was determined that the data available was current and no further surveys would be necessary.

Discussion took place in May 2011 concerning the 6,000 acre relocation area. Several emails and maps were exchanged; the proposed relocation site was agreed upon by USFWS.

Point of contact with USFWS to date is Mr. Michael Burroughs at the Las Vegas Office.

3. Environmental Baseline

The impacts of the Proposed Project are the difference between the future environment without and with the Proposed Project. The Environmental Baseline for Section 7 of the ESA is the status of the species in the Proposed Project area combined with the factors affecting the species in the Proposed Project area.

3.1. Biological Setting

The Proposed Project is located within the Mojave Desert approximately 30 miles northeast of Las Vegas, Nevada within the Moapa River Indian Reservation, Clark County, Nevada. The Mojave Desert is the transitional area between the hotter Sonoran Desert to the south and the cooler and higher elevation Great Basin Desert to the north. The Proposed Project area is defined by a specific combination of latitude, elevation, geology, and plant species.

The Mojave Desert occupies a significant portion of southeastern California and smaller parts of central California, southern Nevada, southwestern Utah and northwestern Arizona, in the United States. Named after the Mohave tribe of Native Americans, it displays typical Basin and Range topography.

The Mojave Desert's boundaries are generally defined by the presence of the creosote-bursage plant community and *Yucca brevifolia* (Joshua trees) at the higher elevations; considered an indicator species for this desert (Gucker 2006). The topographical boundaries include the Transverse Ranges together with the San Gabriel and San Bernardino mountain ranges. The desert is believed to support between 1,750 and 2,000 species of plants.

The Mojave Desert receives less than 13 inches (254 mm) of rain a year and is generally between 3,000 and 6,000 feet (910 and 1,800 m) in elevation. The Mojave Desert is an area with temperature extremes and four distinct seasons. Winter months bring temperatures dipping to below 20 °F (-7 °C) on valley floors, and below 0 °F (-18 °C) at higher elevations. Storms moving from the Pacific Northwest can bring rain and snow across the region — more often, the rain shadow created by the Sierra Nevada as well as mountain ranges within the desert such as the Spring Mountains bring only clouds and wind. In longer periods between storm systems, winter temperatures in valleys can approach 80 °F (27 °C).

3.1.1. Vegetation Communities Present

Vegetation within the Biological Assessment Area is composed primarily of Mojave Desert creosote bush scrub as defined by Holland (1986) classification of plant communities. Disturbed areas, adjacent and outside of the Biological Assessment Area, are associated with multiple dirt roads and less impacted off road vehicle trails, adjacent railroad and interstate highway (to the east) and adjacent transmission line and natural gas line corridors (to the north and west).

3.1.1.1. Mojave Creosote Bush Scrub

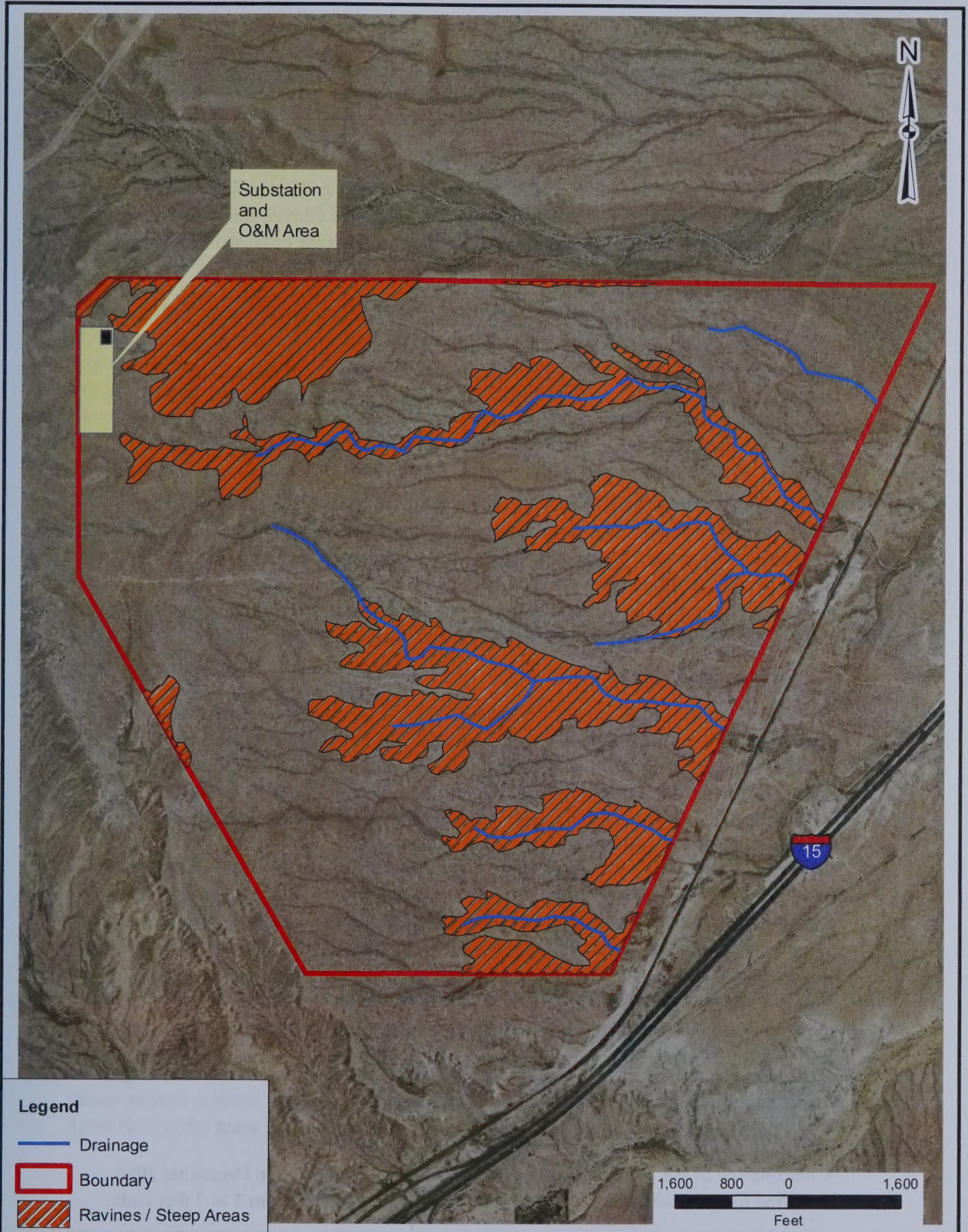
This community is dominated by creosote shrubs (*Larrea tridentate)* and white bur-sage (*Ambrosia dumosa)*, 0.5-3m tall, widely spaced, usually with bare ground between. Growth occurs during spring (or rarely in summer or fall) if rainfall is sufficient. Growth is prevented by cold in winter and limited by drought in other seasons. Many species of ephemeral herbs may flower in late March and April if the winter rains are sufficient as well as multiple species of cacti. This plant community is usually found on well drained secondary soils with very low water-holding capacity on slopes, fans, and valleys. Other, less numerous species of annuals appear following summer thundershowers. This is the basic creosote bush scrub of the Mojave Desert, dominated by *Larrea tridentata* and *Ambrosia dumosa.* Approximately 1,760 acres of this community type exists within the proposed solar facility boundary.

3.1.1.2. Un-Vegetated Habitat

Un-vegetated or rocky, sparsely vegetated habitat occurs on steep rocky slopes and cliffs that dominate the three major drainages located within the proposed solar facility boundary. Little vegetation is associated with these rocky outcrops, but usually consists of cacti and yucca species. An approximate 240 acres of un-vegetated or sparsely vegetative habitat exists along and between the steep rocky drainages within the proposed solar facility boundary (Figure 3-1). This acreage was estimated using 2-foot contours derived from aerial photographic survey obtained in March 2011.

3.2. Soils

The poorly developed soils, almost completely absent in some areas, are mostly clayey sands, usually with abundant caliche-coated rocks present. Site soils are generally shallow, rarely in excess of 18 inches in depth, even in areas away from the base of the mountains, and are typically about 4 inches in depth over an underlying caliche layer. Near the base of the Arrow Canyon Range the valley fills give way to bedrock pediment and eventually to an abrupt upward change in slope at the base of the core of the mountain where benched outcrops of sedimentary facies are exposed. On the core of the mountain, shallow soils are typically present only in small areas where the gradient is less steep.



Map Document:Austin/6923001/GIS/MXD/BLM Lands Figure 1

MALCOLM PIRNIE

K Road Power
San Diego, California

K Road Moapa Solar Project

Moapa River Indian Reservation

Sparsely Vegetated Areas and Cliff Features

MALCOLM PIRNIE, INC.

Sept. 2011

FIGURE 3-1

3.2.1. Soil Series

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey maps (NRCS USDA, 2007) were used to determine the soil information for the property and surrounding area. Tonopah Gravel, Bard Gravel, Badland, and Mormon Mesa are the soil series found within the Proposed Project.

3.2.1.1. Tonopah Series

The Tonopah series consists of very deep, excessively to well drained soils that formed in mixed alluvium. Tonopah soils are on fan remnants and fan piedmonts. Slope ranges from 0 to 15 percent. The mean annual precipitation is about 6 inches and the mean annual temperature is about 65 °F. The present vegetation is mainly creosotebush and white bursage.

3.2.1.2. Bard Series

The Bard series consists of shallow over cemented material, well drained soils that formed in alluvium derived predominantly from limestone and dolomite with some sandstone and quartzite. The Bard soils are on dissected valley fill terraces, alluvial fans and fan remnants. Slope ranges from 0 to 15 percent. The mean annual precipitation is about 5 inches and the mean annual air temperature is about 62 °F. The vegetation is mainly creosotebush, white bursage, annual buckwheat, cholla and other cacti.

3.2.1.3. Badland Series

The Badland unit consists of severely eroded and gullied sideslopes of the mesa. It is made of exposures of the Muddy Creek Formation. The Formation consists of highly stratified sand, silt, and clay that contain a large amount of gypsum and calcium carbonate. Slopes are commonly 15 to 50 percent, but can be as much as 100 percent in some areas. Run-off is very rapid, and the hazard of erosion is very high. This unit is described as generally eroded and barren of vegetation.

3.2.1.4. Mormon Mesa Series

The Mormon Mesa series consist of shallow over petrocalcic, well drained soils that formed in material influenced by calcareous loess over mixed alluvium from predominantly limestone sources. The Mormon Mesa soils are on summits of fan remnants and mesas. Slope ranges from 0 to 15 percent. The mean annual precipitation is about 5 inches and the mean annual temperature is about 65 °F. The vegetation is scattered white bursage, yucca, and creosotebush with some big galleta and Indian ricegrass.

3.3. Water Resources

A field survey of the 2,000-acre proposed solar facility conducted in December 2010 identified five interconnected ephemeral washes ranging in size from 3 to 7 feet wide.

The channels of these washes lacked a continuous bed and bank and had little variation of vegetation from the adjacent areas. In addition, the sandy-gravel substrate was consistent on the adjacent areas. These washes all drain into the California Wash located approximately 5 miles east of the site on the east side of I-15. The drainages within the Proposed Project do not contain or drain to a wild and scenic river. None of the washes found onsite fall within the FEMA 100-year floodzone.

The Proposed Project area is in the Colorado River Basin Region of Nevada's Hydrographic Regions. The Colorado River Basin is one of the larger hydrographic regions in Nevada, covering 5,612 square miles, and includes 27 hydrographic areas. The Proposed Project is located in and around the area called Arrow Canyon Range Cell. Seven groundwater management basins are superposed on the Arrow Canyon Range field. The Proposed Project is located within the California Wash hydrographic basin. Table 3-1 provides the area, perennial yield, and committed resources for this groundwater basin as well as information of a neighboring basin.

Table 3-1.
Groundwater Basin Characteristics

Groundwater Basin	Area (Square miles)[1]	Perennial Yield (acre-feet/year)	Committed Resources[2]	
			Acre-Feet/Year	Designated
Garnet Valley	156	400	3413.20	Yes
California Wash	318	2,200	3067.51	Yes

Source: NDWR 1992; S. Walmsely (pers. Comm. 2010)
Notes: (1) Area for Nevada portion of basin only. (2) As of July 1992

3.4. Topography / Geology

The Proposed Project is situated in the north end of the Dry Lake Valley. The mountains bounding the Dry Lake Valley include the Arrow Canyon Range to the west, Dry Lake Range to the south and North Muddy Mountains to the east. The Arrow Canyon Range is comprised primarily of carbonate rocks of the Bird Spring Formation that are Ordovician to Permian in age (Longwell et al. 1965; Stewart and Carlson 1977). Elevations of the Proposed Project range from approximately 2,038 feet at the intersection of the main project access road at Interstate Highway 15 to 3,089 feet.

Outcrops of the Tertiary age Muddy Creek Formation are exposed throughout the valley. Based on well drillers' logs, the thickness of the Muddy Creek Formation is greater than 4,000 feet on the mesa northeast of the Proposed Project.

4. Description of Species

Only one federally listed species under the ESA (1973) was documented within or near the Proposed Project: the desert tortoise (*Gopherus agassizii*). Section 4.2 lists details of the implemented survey protocol and the results. No other federally listed plant or animal species were documented during field surveys or are expected to exist within the Biological Assessment Area after thorough research of required habitat. Golden Eagle (*Aquila chrysaetos*) may forage in the Proposed Project area as remnant nests have been documented within 10-miles of the site in 2009 by the NDOW (Christy Klinger, Personal Communication, April 4, 2011). The Golden Eagle is protected by the MBTA as well as the BGEPA. The species considered and/or surveyed for during desert tortoise surveys are outlined in Section 4.1.

No Designated Critical Habitat for any listed plant or animal species occurs on the Proposed Project, though critical habitat units for the desert tortoise occur adjacent to the Reservation boundary to the north, northeast and west of the Biological Assessment Area.

4.1. Endangered, Threatened, Proposed, or Candidate Species removed from further consideration

The 10 species listed under the ESA (1973), four candidates for listing under the ESA, and one species protected by the BGEPA that are the focus of this assessment include: 1 invertebrate, 1 reptile, 7 fish, 1 amphibian, 3 birds, and 1 plant species (species believed extirpated from Clark County were not included). The relationship of these species relative to the Proposed Project is based on the Clark County, Nevada list (Appendix C). All species except for the desert tortoise and Golden Eagle were considered to be not found on site or, no substantial habitat was present on site. This section contains an account of each species covered in this Biological Assessment.

4.1.1. Mt. Charleston Blue Butterfly

The Mt. Charleston blue butterfly is a distinctive subspecies of the wider ranging Shasta blue butterfly (*Icaricia shasta*), a member of the Lycaenidae family (little butterfly family). The subspecies is known to occur only at high elevations of the Spring Mountains, located approximately 25 miles west of Las Vegas in Clark County, Nevada. The butterfly requires open habitat that supports its larval host plant, Torrey's milkvetch (*Astragalus calycosus* var. *mancus*), which grows between 5,000 to 10,800 feet on the east side of the Spring Mountains. The core colonies for the Mt. Charleston blue butterfly are located on less than 9 acres in Kyle and Lee Canyons, on lands managed by the Forest Service in the Spring Mountains National Recreation Area of the Humboldt-Toiyabe National Forest. The Proposed Project highest elevation is near 3,000 feet and not adequate for growth of Torrey's milvetch.

4.1.2. Pahrump Poolfish

Pahrump poolfish (*Empetrichthys latos*) were listed Endangered in the entire range on March 11, 1967 (32 FR 4001). Originally called the Pahrump killifish this species is a member of the Goodeidae family. This species reaches about 5.1cm at maturity, and is omnivorous, feeding on a wide variety of available plant and animal material.

4.1.3. Lahontan Cutthroat Trout

Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) was listed Endangered on October 13, 1970 (35 FR 16047 16048), reclassified as Threatened (40 FR 29863 29864). Recovery Plan approved on January 30, 1995. The Lahontan cutthroat trout is an inland subspecies of cutthroat trout belonging to the Salmonidae family. Stream-dwellers generally live less than 5 years, and lake-dwellers live between 5 and 9 years. Lahontan cutthroat trout range between 10 and 15 inches in length, and feed on terrestrial and aquatic insects.

4.1.4. Woundfin

The Woundfin (*Plagopterus argentissimus*) was listed Endangered on October 13, 1970 (35 FR 16047 16048), Critical Habitat listed on January 26, 2000 (65 FR 4140 4156). Its Recovery Plan was approved on April 19, 1995. Woundfin is a member of the Cyprinidae family. The woundfin is considered the most highly specialized species in the genus Plagopterini (Miller and Hubbs 1960). The species rarely achieves a standard length of more than 3-inches. Woundfin are opportunistic omnivores, and will feed on filamentous algae, detrital material, tamarisk seeds, and insects depending on availability.

4.1.5. Bonytail Chub

Bonytail chub (*Gila elegans*) were listed Endangered (45 FR 27710 27713, 1980 April 23) with Critical Habitat (59 FR 13374 13400, 1994 March 21). The Recovery Plan completed September 4, 1990. The body of an adult bonytail chub is highly streamlined, a greenish-grey, dusky color on its back with silvery sides, and a white belly. The bonytail chub may reach up to 24 inches in length and weigh over 2 pounds.

4.1.6. Virgin River Chub

Virgin River Chub (*Gila seminude*) was listed Endangered Aug. 24, 1989 (54 FR 35305 35311). The Recovery Plan was approved on April 19, 1995. The Virgin River Chub is a subspecies of *Gila robusta* of the Cyprinidae family, and is considered the rarest native fish in the Virgin River. It is silvery, medium-sized, and is typically 20cm, but can grow up to 45cm.

4.1.7. Razorback Sucker

Razorback sucker (*Xyrauchen texanus*) was listed Endangered (56 FR 54957 54967, 1991 October 23) with Critical Habitat (59 FR 13374 13400, 1994 March 21). The Recovery

Plan was completed December 23, 1998. The razorback sucker, also known as the humpback sucker, is a member of the Catostomidae family. The species can grow more than 2 feet in length, weigh more than 6 pounds, and live 40+ years. Examination of stomach contents of adult razorback suckers from Lake Mohave indicates that the species is a benthic feeder, whose diet includes planktonic crustaceans, diatoms, filamentous algae, and detritus (USFWS 1991).

Due to the lack of perennial water and flowing streams within the Proposed Project area, all fish were considered non-existent and were not examined further.

4.1.8. Yuma Clapper Rail

The Yuma Clapper Rail (*Rallus longirostris yumanensis*) was listed as an endangered species on March 11, 1967, pursuant to the Endangered Species Preservation Act of 1966 (32 FR 4001). The Recovery Plan was finalized in 1983 and portions of the Action Plan were initiated over the ensuing years. The Yuma clapper rail is one of the smaller subspecies of clapper rail, with adult males standing eight inches tall and weighing 266.8 grams on average (Todd 1986). Females are slightly smaller. Adult Yuma Clapper Rails of both sexes are similar in plumage; they possess a long, slender slightly de-curved bill, a laterally compressed body, and relatively long legs and toes compared to body size. The upper mandible is dark grey, fading to orange at the base and the tip. The head and scapular area are grey, with browns and oranges appearing on the sides of the neck and under the head. The chin and upper throat are white, and there is a light eyebrow stripe extending from above the eye to the upper mandible. The breast is tawny- or burnt-orange in the male, and a brick-orange in breeding females. The upper body is light grey to dark brown, becoming blotchy and dominant on the rump and distally on the wings. The underside and flanks forward of the legs are dark grey with vertical white stripes. The tail is dark brown above and white below. Legs are unfeathered and orange-flesh in color (Todd 1986).

The present range of the Yuma Clapper Rail in the U.S. includes portions of Arizona, California, and Nevada. The Yuma clapper rail lives in freshwater marshes dominated by cattail (*Typha* sp.) and bulrush (*Scirpus* ssp.) with a mix of riparian tree and shrub species (*Salix exigua*, *S. gooddingii*, *Tamarix* sp., *Tessaria serica*, and *Baccaris* sp.) along the shoreline of the marsh (Eddleman 1989). No habitat for this species occurs within the Proposed Project and therefore was eliminated from further review.

4.1.9. Yellow-billed Cuckoo

The Yellow-billed Cuckoo (*Coccyzus americanus*) is a federal candidate for listing as threatened or endangered under the ESA. The Yellow-billed Cuckoo has always been rare in Nevada and while there are still small areas of suitable habitat within the state, the species is apparently extirpated from Nevada (Center for Biological Diversity 1998). Because of recent habitat loss and further decline in numbers, the USFWS has raised the

listing priority for the Western Continental U.S. Distinct Population Segment of this species (FR 70: 24875). Yellow-billed Cuckoos may still utilize remnant habitats present within the state during migration.

Based on historic accounts, the species was widespread and locally common in California and Arizona, locally common in a few river reaches in New Mexico, locally common in Oregon and Washington, generally local and uncommon in scattered drainages of the arid and semiarid portions of western Colorado, western Wyoming, Idaho, Nevada, and Utah. The scattered cottonwoods on the Colorado River tributaries (Virgin, Muddy, and Pahranagat) are the last places in Nevada where the Yellow-billed Cuckoo can potentially be expected to occur.

Due to the lack of aquatic or riparian areas within the Proposed Project, this species was removed from further evaluation.

4.1.10. Southwestern Willow Flycatcher

The Southwestern Willow Flycatcher (*Empidonax traillii extimus)* was listed by the USFWS as an endangered species within its entire range on February 27, 1995 (FR 60: 10693-10715). Critical habitat for the species was originally established in 1997 (FR 62: 39129-39147) but subsequently vacated and incidental protection provided along the Virgin River and its 100-year floodplain from the Arizona/Nevada border to Halfway Wash in Nevada (FR 65: 4140-4156).

Critical habitat was again proposed on October 12, 2004 (FR 69: 60706-60736) and redefined and re-instituted in 2005 (FR 70: 60886-61009). Critical habitat for the Southwestern Willow Flycatcher in Nevada is currently limited to portions of the Virgin River above its confluence with the Muddy River (FR 70: 60886-61 009).

For nesting, flycatchers require dense riparian habitats with microclimatic conditions dictated by the local surroundings. Saturated soils, standing water, or nearby streams, pools, or cienegas are a component of nesting habitat that also influences the microclimate and density of the vegetation component.

No riparian or microhabitat conditions exist within the Proposed Project. The flycatcher was removed from further evaluation.

4.1.11. Golden Eagle

The Golden Eagle is protected under the BGEPA as well as the MBTA. Helicopter surveys completed in 2009 by NDOW indicate that suitable nesting and remnant nests occur in the Arrowhead Canyon area approximately 8-10 miles west of the Proposed Project. It is not likely that Golden Eagles will be impacted directly however; they could be impacted indirectly through loss of potential foraging habitat. A quantitative assessment will be completed via an ABPP to determine potential indirect impacts to

Golden Eagles as well as address mitigation measures. The ABPP will be completed and approved prior to any construction at the Proposed Project.

4.1.12. Relict Leopard Frog

In May 2002, the USFWS was petitioned to list the relict leopard frog as an endangered species under the ESA (Center for Biological Diversity and Southern Utah Wilderness Alliance 2002). The petition was largely based on the restricted distribution of the known populations and low numbers of individuals of the species.

The relict leopard frog (*Lithobates onca*) is a medium-sized frog (1.75-3.5 inches in length) in the family Ranidae (true frogs). Generally, the relict leopard frog is brown to grey above with greenish brown spots that are often reduced or obscure on the front of the body. The colors underneath are white to yellow with occasional grey or brown mottling. The dorsolateral folds are indistinct and end well before the groin. A light line runs from below the eye, under the tympanum, to behind the angle of the mouth (Stebbins 2003).

Leopard frogs generally require shallow water with emergent vegetation for foraging and basking, and deeper water, root masses, undercut banks, and debris piles for cover and hibernacula. Relict leopard frogs are currently known to occur only in seven natural and eight translocated sites within two general areas in Nevada: near the Overton Arm area of Lake Mead, and Black Canyon below Lake Mead (Bradford *et al.* 2004), approximately 24 miles southeast of the Proposed Project area.

Habitat for the relict frog does not exist within the Proposed Project area and therefore was removed from further evaluation.

4.1.13. Las Vegas Buckwheat

The Las Vegas buckwheat (*Eriogonum corymbosum var. nilesii*) is a woody perennial shrub that grows up to four feet high and has a mounding shape. The subspecies is distinguished from closely related plants by leaves that are densely hairy on one or both surfaces and at least twice as long as they are wide, with dense hairs spread along the stem. Branches are woolly haired and swollen at branch intersections. Flower clusters are one to four inches long with the flowers arranged in umbrella-like groups (called "corymbs") at the ends of branches; the clusters branch widely and are sometimes thorny. The numerous flowers are small and yellow with small bract-like leaves at their bases.

The Las Vegas buckwheat has a distinct preference for soils with high gypsum content. Typically, gypsum soil outcroppings occupied by Las Vegas buckwheat are sparsely vegetated with exposed soils covered with a cryptogamic (living) soil crust. This plant is confined to extremely limited areas in the counties of Clark and Lincoln, Nevada.

The soils found at the Proposed Project area consist of 90 percent Mormon Mesa fine sandy loam and the Badland soil series. The Mormon Mesa series consist of shallow over petrocalcic, well drained soils that formed in material influenced by calcareous loess over mixed alluvium from predominantly limestone sources. The Mormon Mesa soils are on summits of fan remnants and mesas. Slope ranges from 0 to 15 percent. The mean annual precipitation is about 5 inches.

Badlands are a type of arid terrain with clay-rich soil that has been extensively eroded by wind and water. Canyons, ravines, gullies, hoodoos and other such geological forms are common in badlands. These two soil descriptions do not represent the required gypsum rich habitat required for the Las Vegas buckwheat to exist. Geotechnical investigations confirmed the soil types upon the mesa. The remaining soils are Tonapah and Bard found near the northwest and northeast corners of the Proposed Project. These soils do not contain the high gypsum content required for the Las Vegas buckwheat. Although the Badlands soil type may have high gypsum content, the extreme slopes and canyon walls neither allow for Las Vegas buckwheat habitat nor would impacts to these areas result from the placement of solar modules. The lack of suitable soils resulted in no further investigation for this species. Further, Las Vegas Buckwheat was not documented during desert tortoise surveys completed in October 2010.

4.2. Moapa Dace

The Moapa dace (*Moapa coriacea*) occurs in the Muddy River system and is listed as endangered under the ESA. Since the Moapa dace represents a monotypic genus, this species was assigned a recovery priority of 1 (highest ranking) by the USFWS in 1995. The original recovery plan for this species was prepared in 1983 and subsequently revised in 1995. There is currently no critical habitat designated for the Moapa dace (USFWS 2012).

4.2.1. Species Description

The Moapa dace was first collected in 1938 and was described by Hubbs and Miller (1948). Key identification characteristics are a black spot at the base of the tail and small, embedded scales, which create a smooth leathery appearance. Coloration is olive-yellow above with indistinct blotches on the sides; the belly is white. A diffuse, golden-brown side stripe may also be present. Maximum size is approximately 4.7 inches (in) fork length (fork length; measured from the tip of the snout to the base of the fork in the tail). Among North American minnows (Family: Cyprinidac), *Moapa* is regarded as being most closely related to the dace genera *Rhinichthys* (speckled dace) and *Agosia* (longfin dace) (Coburn and Cavender 1992).

4.2.2. Distribution and Life History

The Moapa dace is endemic to the upper Muddy River watershed. Currently the Moapa dace inhabits approximately 6 miles of stream habitat that includes the upper Muddy River and five thermal headwater spring systems in the Warm Springs area. Moapa dace are present at some life stage in all of the various aquatic habitats of the Muddy River watershed from the Warm Springs area to the main stem of the Muddy River. Waters emanate from the Warm Springs at temperatures up to 89.6 degrees Fahrenheit. Cooler water temperatures in the middle and lower Muddy River were likely a natural barrier to downstream movement of Moapa dace (La Rivers 1962, USFWS 1995b).

Moapa dace are endemic to the upper Muddy River and tributary thermal spring systems within the Warm Springs area. Historically, they may have inhabited as many as 25 individual springs and up to 10 miles of stream habitat (Ono et al. 1983). Habitat use varies among larval, juvenile, and adult life stages. Larval dace are found only in the upper reaches of tributaries and occur most frequently in slack water, while juveniles show a preference for increased flow velocities in tributaries, and as they mature progress to use of the main stem of the Muddy River as adults (USFWS 1995b). Larger adults are typically associated with higher-velocity flows 2.6-3.0 feet per second (ft/sec)] (Cross 1976), and the largest adults occur in the river (Scoppettone et al. 1987). Adult dace inhabit both tributaries and the main stem Muddy River, but occur more often in the river except during spawning (Scoppettone et al. 1987, 1992).

Visual observations of Moapa dace have revealed that they feed primarily on drift items, but adults forage from the substrate as well. Larval dace feed on plankton in the upper water column, in areas with little or no current, and juvenile dace feed at mid-water level. Schools of 30 or more dace have been observed congregating at drift stations to feed (Scoppettone et al. 1987).

4.2.3. Species Status in the Proposed Project Area

Moapa dace currently inhabit approximately 6 miles of stream habitat within five spring systems and the upper Muddy River. In the Muddy River, their range extends to approximately 1,000 ft downstream of the Warm Springs Road bridge. The fifth spring system originates on Moapa Valley National Wildlife Refuge (NWR), but the outflow (Refuge stream) flows through private land before reaching the Muddy River (USFWS 1995a). The closest known location for the Moapa dace to the Proposed Project site is over 13 miles away.

When the original Moapa Dace Recovery Plan was written in 1983, the Moapa dace population was estimated to consist of less than 1,000 individuals, restricted to three springs and less than 2 miles of tributary and main stem Muddy River habitat (USFWS 1983). During 1984-87, National Fisheries Research Center (NFRC) extensively surveyed historical Moapa dace habitat and estimated the adult dace population at 2,600

to 2,800 individuals (Scoppettone et al. 1992). This population estimate represented the most accurate data on abundance and distribution ever gathered on the species. The apparent increase in the Moapa dace population in the 1980's may have been related to differences in survey techniques between NFRC and previous researchers. NFRC estimated the Moapa dace population by snorkeling habitats within the Warm Springs area and counting the number of dace observed. Earlier surveys were done with seines or by electrofishing, methods which provide estimates of relative abundance, but are less reliable for estimating the size of the Moapa dace population (USFWS 1995c).

4.2.4. Threats to the Species

The causes for the population declines of this species are not entirely clear, but suggested factors include alteration of aquatic habitat due to agriculture and water development, and the introduction of exotic predators and competitors.

Alteration of Aquatic Habitat

Alteration of Moapa dace habitat in the Warm Springs area began before the species was discovered, primarily for irrigation purposes (Scrugham 1920). The spring systems and the upper Muddy River have since been developed for recreational, industrial, and municipal uses as well.

Natural spring pools in both the Desert Oasis Warm Springs Resort and the Moapa Valley National wildlife refuge spring systems were enlarged and lined with concrete and/or gravel to create public swimming pools. Moapa dace were eliminated from both spring systems prior to 1979.

In 1944, the U.S. Bureau of Reclamation constructed a Cipoletti weir gaging station on the Muddy River at the Warm Springs Road bridge. The concrete weir is over 10 ft high and impounds approximately 150 ft of Moapa dace habitat in the upper Muddy River immediately downstream of NPC's diversion dam. The weir is a physical barrier to upstream movements of all fishes in the middle and lower Muddy River and likely affects flows, substrate, aquatic vegetation, and fish species composition, but to a lesser extent than the NPC dam. The present range of Moapa dace extends downstream of this structure, and these dace are lost to the reproductive population as well.

One spring in the Apcar system has been enlarged and concreted to make a private swimming pool. Water rights from other springs in the Apcar system and approximately 0.64 acre of surrounding land were sold to the Moapa Valley Water District (MVWD) (USFWS 1995c). MVWD has channelized and piped these springs (since 1959) for local municipal use. Another outflow stream in the Apcar system flows through a culvert under Warm Springs Road and into dirt and cement irrigation ditches on Warm Springs Ranch. At least two spring systems on Warm Springs Ranch were historically channelized and diverted for irrigation. Previously, irrigation return flows and run off

from fields on Warm Springs Ranch greatly increased turbidity and sediment loads in the spring outflows and upper Muddy River (USFWS 1995c).

Moapa dace move between the river and tributaries for spawning and to avoid periodically unfavorable water quality conditions in the river (i.e., high turbidity). The main stem Muddy River is a vital component of Moapa dace habitat and typically supports approximately 50 percent of the dace population (Scoppettone et al. 1987). Moapa dace habitat in the Muddy River has been adversely modified by human activities directly affecting the river and also indirectly by activities affecting the river's headwater springs, tributaries, and floodplain.

In addition to spring water leased from MVWD and groundwater leased from at least three wells on Warm Springs Ranch, Nevada Power Company (NPC) diverts water directly from the upper Muddy River for use at Reid-Gardner Station, an electrical generating facility near Moapa, Nevada. Diversions at this site have occurred since 1968 (USFWS 1995c).

The existing NPC diversion dam on the Muddy River was constructed in 1988-1989. It impounds approximately 450 feet of the upper Muddy River and has reduced the overall suitability of this habitat for Moapa dace. Decreased flow velocities upstream of the dam have also increased silt deposition and promoted establishment of extensive beds of nonnative eel grass, both of which cover vital sand, pebble, and cobble substrates. Nonnative fish species, including shortfin mollies and mosquito fish *(Gambusia affinis),* are well established in this habitat. The dam also inhibits upstream movement of Moapa dace which are downstream of the structure, preventing access to spring systems for spawning (USFWS 1995c).

In March 2006, the USFWS issued a non-jeopardy tiered Biological Opinion for the construction of a residential development in the Coyote Springs Valley. The USFWS estimated that the proposed action would result in the incidental take of Moapa dace associated with the loss of 6 percent of riffle habitat and 5 percent of pool habitat (USFWS 2006).

The potential impacts of the Proposed Project's water withdrawal on area wells were evaluated in the Hydrogeologic and Groundwater Modeling Analysis for the Calpine Company Moapa Paiute Energy Center Proposed Project (Mifflin 2001). The Proposed Project required a 7,000 acre feet a year (AFY) of groundwater extraction from the California Wash hydrographic basin for purposes of electric power generation. The study uses various models/simulations to estimate 25 and 45-year drawdown and to assess the impacts of the proposed 7,000 AFY appropriation in the site area and hydrologic impacts in major spring areas.

Introduction of Nonnative Species

A decline in Moapa dace abundance was first noted shortly after the introduction of nonnative shortfin mollies *(Poecilia mexicana)* in 1963 (Deacon and Bradley1972, Cross 1976). Through stocking, nonnative mosquitofish became established in the Muddy River system by 1938, but typically occupied pool habitats and did not appear to substantially impact the Moapa dace population (USFWS 1995a).

Shortfin mollies were introduced into the Muddy River ecosystem in the early 1960's and had a much greater impact on Moapa dace than did mosquitofish. Shortfin mollies were common in the Muddy River by autumn 1963 (Hubbs and Deacon 1964), but were not the predominant species in the headwater spring systems until January 1965 (Deacon and Bradley 1972). The concurrent decline in the abundance of Moapa dace during these years was likely related to interactions between these two species (USFWS 1995c).

Habitat use by mollies is similar to that of Moapa dace (Deacon and Bradley 1972, Scoppettone et al. 1987). Deacon and Bradley (1972) estimated spatial overlap between Moapa dace and short fin mollies at 68 percent; Scoppettone (1993) estimated spatial overlap between adult shortfin mollies and larval and juvenile Moapa dace at 44-45 percent. Laboratory experiments have demonstrated that shortfin mollies are fish larvae predators (Scoppettone 1993), and this may have been the mechanism effecting the decline in Moapa dace abundance (USFWS 1995c).

In addition to mosquitofish and shortfin mollies, numerous other nonnative fish species have been collected in the Muddy River. Common carp *(Cyprinus carpio)* were first collected in 1938; channel catfish *(Ictalurus punctatus),* largemouth bass *(Micropterus salmoides),* and green sunfish *(Lepomis cyanellus)* were collected in 1942 (UMMZ 1994). Deacon and Bradley (1972) collected several additional nonnative fish species in the Muddy River during 1963-68 including: Red shiner *(Cyprinella lutrensis),* fathead minnow *(Pimephales promelas),* and black bullhead *(Ameiurus melas).* Two additional nonnative fishes present during 1974-75 collections by Cross (1976) were golden shiners *(Notemigonus crysoleucas)* and a single rainbow trout *(Oncorhynchus mykiss).* Historically, nonnative fishes other than mosquitofish, mollies, and common carp have been collected only from the middle and lower Muddy River (USFWS 1995c).

The effects of nonnative fishes on Moapa dace have not been studied, other than those of mosquitofish and shortfin mollies. However, in addition to direct effects such as predation, prior nonnative fish introductions have introduced fish parasites including tapeworms *(Bothriocephalus acheilognathi),* nematodes *(Contracaecum* spp.), and anchor worms *(Lernaea* spp.) which have adversely affected native fishes of the Muddy River (Wilson et al. 1966, Heckman 1988). The anchor worm *(Lernaea* spp.) has been identified as a Moapa dace parasite (Wilson et al. 1966); however, the current extent of Moapa dace infestation by this copepod and other parasites is unknown. Anchor worm

infestations cause tissue damage and blood loss and expose fish to secondary infections from bacteria, fungi, and viruses (USFWS 1995c).

Heavy infestations may cause reduced longevity, reduced fecundity, and even direct mortality. Tapeworms may cause fish to become listless, lose weight, or become sterile; severe infections may cause the abdomen to become distended and block the intestine (USFWS 1986). Nematodes may encyst in fish muscle tissue with detrimental effects on overall fish health (Wilson et al. 1966). Adverse effects to Moapa dace from nonnative species other than fishes include predation by bullfrogs *(Rana catesbeiana)* and spiny soft-shelled turtles *(Trionyx spiniferus)* (USFWS 1989).

4.2.5. Critical Habitat

There is currently no critical habitat designated for the Moapa dace (USFWS 2005).

4.3. Desert Tortoise

The desert tortoise consists of two geographically dissimilar populations: the Sonoran and Mojave. The Sonoran population is found in most of Arizona, western New Mexico and south through Sonora to northern Sinaloa, Mexico. The Sonoran population of the desert tortoise also occurs on Isla Tiburon, in the Sea of Cortez (Germano et al. 1994). The Mojave population of the desert tortoise is found in southern Nevada, southeastern California, the Beaver Dam Mountains and Virgin River area of southwestern Utah and northwestern Arizona. This population is restricted to areas north and west of the Colorado River.

The Mojave population has been divided into six distinct population segments or recovery units, each designated as an evolutionarily significant unit (ESU). Each ESU was delineated based on variations in genetic, morphological, ecological, physiological, and behavioral traits (USFWS 1994). Some of the six recovery units were further subdivided into DWMAs. A total of 6.4 million acres of Critical Habitat was designated in 1994 (59 FR 5820-5866). Within those six management units, DWMAs were identified, where populations of tortoises facing similar threats would be managed with the same strategies (59 FR 5820-5866).

Among the most important recovery actions implemented pursuant to the 1994 Recovery Plan has been formalizing DWMAs through Federal land use planning processes. Particularly on Bureau of Land Management lands, DWMAs are administered and designated as Areas of Critical Environmental Concern (ACEC). These ACECs define specific management areas based on the general recommendations for DWMAs in the 1994 Recovery Plan. Boundaries of the ACECs were refined slightly from the critical habitat designation based on various management and biological considerations. The Bureau of Land Management DWMAs/ACECs, together with National Park Service lands, designated wilderness areas, other lands allocated for resource conservation, as well as restricted-access military lands

provide an extensive network of habitats that are managed either directly or indirectly (*e.g.*, wilderness areas outside desert tortoise ACECs) for desert tortoise conservation (USFWS 2011c).

The desert tortoise is protected by the State of Nevada. The Mojave population is on the watch list of species in Clark County, Nevada, and it is considered sensitive by the BLM and USFS.

The Proposed Project is contained within the boundary of the Reservation near the middle of the north end of the Dry Lake Valley west of Interstate Highway 15. The nearest DWMA (Mormon Mesa) to the Proposed Project area is on the west slope of the Arrow Canyon Range, west of the Proposed Project area.

4.3.1. Species Description

The desert tortoise was first described by Cooper in 1863 as *Xerobates agassizii*, named after Louis Agassiz. Over the years, it has been known under different genera including *Scaptochelys* (Bramble 1971), *Xerobates* (Lamb et al. 1989), and *Gopherus* (Crumley 1994), the genus under which it is now recognized.

The desert tortoise has a domed carapace and a relatively flat, unhinged plastron. Adults will reach a carapace length of 8 to 15 inches and shell height of 4 to 6 inches. Adults typically weigh 8 to 15 pounds. When hatchlings emerge from their eggs, they are approximately 2 inches long (Ernst et al. 1994).

The desert tortoise is greenish-gray to dark brown with tan scute centers. Their forelimbs have heavy, conical scales and are flattened for digging and burrowing. Hindlimbs are more elephantine. When limbs pull in, they block the openings of the shell (Ernst et al. 1994).

4.3.2. Distribution and Life History

The Mojave population of the desert tortoise is found primarily in Mojave desertscrub and is also found, to a lesser extent, in the Lower Colorado River Subdivision of Sonoran desertscrub in southeastern California. They are generally associated with communities dominated by creosote bush, often with other shrubs such as white bursage or saltbush (*Atriplex* spp.) occurring as co-dominants with small cacti present (AGFD 2001). Some parts of their habitat may contain abundant Joshua trees (*Yucca brevifolia*). In contrast to the Sonoran population, Mojave population desert tortoises prefer sandy loam or rocky soils in valleys, bajadas, and hills. They may be found at elevations below sea level in Death Valley, California, and up to about 5,000 feet at Yucca Mountain, Nevada (AGFD 2001).

Adequate shelter is a critical habitat component for the Mojave desert tortoise. Like the Sonoran population, the Mojave population will use burrows to avoid extreme hot or cold temperatures.

Mojave desert tortoises are more likely to excavate burrows under vegetation than in rocky areas, and their burrows can be up to 10 meters (33 feet) in length (AGFD 2001). The utilization of burrows by the Mojave desert tortoise aids in body temperature regulation through higher humidity and the resultant evaporative cooling effects within the burrow (Lawler, no date).

The annual cycle of the Mojave population tortoises begins in February or March when they emerge from hibernation (AGFD 2001). Mating generally takes place in the spring, and 2 to 14 eggs are laid in an excavated nest near a shrub or burrow entrance between May and July (Lawler, no date). Young tortoises emerge from the eggs after incubating for 70 to 135 days (Lawler, no date). Hatchling and juvenile mortalities are very high; it has been estimated that only one hatchling for every 15 to 20 nests will survive to reach sexual maturity (Lawler, no date). Average age of sexual maturity of females is primarily a function of animal size, but is usually between the ages of 12 and 25 years. Members of the Mojave population produce from one to three clutches of eggs per year, but the total number of eggs laid may be similar to the single larger clutch produced by Sonoran population tortoises.

Desert tortoises are primarily herbivores, consuming a wide variety of plant materials including dicot annuals, grasses, herbaceous perennials, trees, shrubs, subshrubs/woody vines, and succulents (AGFD 2001). A study of their food habits in the Mojave Desert (Jennings 1997) found that they used 43 plant species, including 37 annuals and 6 perennials. Some of the preferred plants were dwarf white milkvetch (*Astragulus didymocarpus*), widow's milkvetch (*A. Zayneue*), Booth evening primrose (*Cumissoniu boothii*), rattlesnake weed (*Camissonia* [Euphorbia] *albomarginatu*), foothill deervetch (*Lotus humistratus*), Bigelow four o'clock (*Mirabilis bigelovii*), and brightwhite (*Prenanthella exigua*). Tortoise diet in this study showed a very strong preference for native plants (95.3 percent), and some of their preferred food plants were uncommon to rare (Jennings 1997).

A study on juvenile tortoises (Spangenberg 1995) found a preference for non-native invasive plant species such as Mediterranean grass (*Schismus burbutus*) and filaree (*Erodium cicutariurn*). These two species comprised 64 percent of the juvenile tortoise diet. This study also revealed a difference in diet between wet and dry summers. During a very dry summer, tortoises were observed foraging on only three species, while they used 15 species during a wet summer (Spangenberg 1995). Tortoises may forage selectively, sampling several possibilities before consumption (Lawler, no date). Selective food preferences for individual tortoises within a population make plant species diversity an

important constituent of preferred tortoise habitat (Tracy 2001). They will also ingest rocks, bones, and soil, possibly to maintain intestinal bacteria, to provide additional minerals, or as gastroliths to aid digestion (Lawler, no date).

The Mojave population of desert tortoise occurs primarily on flats and bajadas with soils ranging from sand to sandy-gravel, characterized by scattered shrubs and abundant inter-space for growth of herbaceous plants. They occur in creosote bush, alkali sink, and tree yucca habitats in valleys, on alluvial fans, and in low rolling hills at elevations ranging from sea level to 5,000 feet. They appear to prefer bajadas and desert washes where soils range from sandy-loam to light gravel-clay which is optimal for burrow construction. Shelter sites often occur on lower bajadas and basins in burrows dug in soil, cavities in sides of washes and depressions under shrubs.

4.3.3. Species Status in the Proposed Project Area

Estimated tortoise density within the Proposed Project area is estimated at 8 to 32 adult tortoises per square mile as a result of October 2010 surveys performed by ARCADIS-US. Pre-development surveys for Mojave population desert tortoises were conducted in for the proposed Moapa Paiute Energy Center (2001) located in the immediate vicinity of the Proposed Project. Surveys in that area of the Reservation found that tortoise densities per square mile ranged from low (10-45) to very high (+140).

4.3.4. Threats to the Species

In general, downward trends in desert tortoise numbers and habitats result from urban development, long-term livestock grazing, mining, off-highway vehicle use, and collecting. Mortimer and Schneider (1983) suggested a Nevada die-off in the early 1980s was due in part to drought conditions and that habitat had been adversely impacted by long-term grazing intensities. D'Antonio and Vitouseki (1992) indicate that the increasing incidence and severity of fires combined with changes in vegetative community types, primarily towards exotic ephemerals, have adversely affected desert tortoises. Habitat fragmentation is another major contributor to population declines (Berry 1986). Populations have been fragmented and isolated by urban development, highway construction, and development within powerline corridors.

The most serious problem facing the Mojave population of the desert tortoise is the "cumulative effects of human and disease-related mortality accompanied by habitat destruction, degradation, and fragmentation" (USFWS 1994). Human contact includes a number of threats. Among the most common are collection for food, pets, commercial trade, and medicinal uses, as well as being struck and killed by on-and-off road vehicles. Still another is by gunshot. Berry (1990) found that between 1981-1987, 40 percent of the tortoises found dead on a study plot in Freemont Valley, California, had been killed by gunshot or by off-road vehicles.

Predation is another factor. Hatchlings and juveniles are preyed upon by several native species of reptiles, birds, and mammals, as well as by domestic and feral dogs. Predation by ravens is intense, as their population has grown over the last few decades due to increased food supplies provided by human development. Berry (1990) believes that predation pressure by ravens in some portions of the Mojave is so great that recruitment of juveniles into the adult population has been halted.

Disease has been noted as a factor since 1990. An upper respiratory tract disease has been discovered and is currently a major cause of mortality in the western Mojave Desert population. Predisposing factors, such as habitat degradation, poor nutrition, and drought, have only served to compound the problem (1994a).

Habitat destruction, degradation, and fragmentation are yet some other threats. Over the last 150 years, there have been substantial decreases in perennial grasses and native annuals and an increase in exotics, which serve as fire hazards. Perennial shrubs and grasses used for cover and food have been diminished and have been replaced by inedible exotic ephemerals. Also, as the habitat becomes increasingly fragmented, desert tortoises are forced to forage over larger areas and are thus exposed to greater dangers. Finally, grazing by domesticated animals damages the soil, reduces water filtration, promotes erosion, and invites invasion by exotic vegetation (USFWS 1994).

Invasion by exotic plants can have a significant negative impact on tortoises due to the changes that are effected in the native plant community. Red brome, for example, a European import, competes with native perennial grasses, shrubs, and annuals. Recurrent fires due to presence of exotic ephemerals such as red brome can reduce the abundance and diversity of native forbs on which the tortoises depend (National Park Service 2001). The increased fires also aggravate habitat fragmentation, which is a major contributor to tortoise population declines (USFWS 1994).

While predators are not normally a concern for tortoise populations where the ecosystem is in balance, disturbance of the ecosystem can cause predators to become a management issue. Increasing populations of the most important native predators, the common raven and the coyote, have resulted in increased mortality of hatchlings and juvenile tortoises. The USFWS Breeding Bird Survey Program showed a 15-fold increase in raven populations in the Mojave Desert for the 20-year period from 1968 to 1988 (BLM et al. 1989). This surge in the raven population was attributed to mostly human-induced increases in food and water supplies, combined with an increase in perching and nesting structures. The food supplies listed were road-kills, landfills, trash, garbage dumps, and agricultural developments. The perching structures listed were fence posts, power poles and towers, signs, buildings, bridges, and freeway access ramps. Elevated perches are typically scarce in the Mojave Desert, and such manmade substitutes provide perching sites for predatory birds. Farrell (1989) documented ravens utilizing power line towers

for perches while consuming juvenile tortoises (USFWS 1994). Human predation in the form of highway mortality and illegal removal of adult tortoises for pets are also factors in the decreasing numbers of desert tortoises (USFWS 1994; Lovich 1999). Tortoises will urinate in response to harassment and this jeopardizes their survival through the summer due to water loss.

Manipulation of populations or individual tortoises during earlier conservation efforts was mostly unsuccessful; however, translocation since 1997 appears to be successful (personal communication, USFWS). The former may have been due to lack of information regarding tortoise ecology or poor planning. Translocation of in-situ tortoises and reintroduction of captive tortoises to the wild by the public are ongoing problems. The historic lack of success of reintroductions can be attributed to several factors, such as the tendency of relocated tortoises to attempt a return to their home territory, increased vulnerability to predators and potential agonistic responses from resident tortoises. Additionally, the potential serious consequences of the spread of diseases, especially URTD and genetic pollution are reasons to mitigate such movements of tortoises (USFWS 1994).

4.3.5. Protocol Survey Methodology

Desert tortoise surveys were conducted between October 11, 2010 and October 20, 2010 utilizing USFWS guidelines and methodology (2010). East/West transects were overlain on the 2,000 acre proposed solar faciltiy using GIS. Each transect was of varying length due to shape of the solar facility; however, all were plotted 10 meters apart and parallel. In total, 300 transects were utilized to obtain 100 percent coverage of the proposed solar facility. A total of 502 miles of transect were walked within the Project boundary. The transects were downloaded into Global Positioning System (GPS) units, capable of sub-meter accuracy, and used to navigate the vast area. A total of eight biologists (two teams of four) were assembled to complete the surveys within 10 days. The project teams worked from opposite ends (north and south) of the site and completed the surveys by meeting towards the middle of the site.

In addition to the 2,000 acre proposed solar facility survey, the proposed approximate 5.5-mile 500kV transmission line, 3.7-mile 500kV alternate transmission line, approximate 3.0-mile 12kv transmission line and half mile water pipeline corridor, each 200-feet in width, were surveyed using 10m transect spacing. A total of 60 miles of transects were walked for the transmission line corridors and 3 miles for the water pipeline corridor.

The biologists, each equipped with sub-meter GPS units loaded with data dictionaries, recorded tortoise burrows, tortoise sign (tracks, scat, shell), or actual sighting of a tortoise during the transect survey. Live tortoises were visually inspected and details on health, size and sex were recorded. No tortoises were handled or harassed during the survey.

4.3.6. Protocol Survey Results

Tortoise transect surveys were performed in accordance with the above protocol, to provide coverage of all areas of potential ground disturbance in tortoise habitat associated with the Proposed Project, including the proposed solar field, 500kV transmission line, and water pipeline. Surveys were conducted between October 11, 2010 and October 20, 2010. Figure 4-1 shows the distribution of tortoise sign within the footprint of the proposed solar facility boundary as well as along the proposed and alternative 500kV transmission line, 12kv transmission line and water pipeline ROW. Survey totals below include the permanent construction footprint within the solar field boundary since this will be the only area where translocation of desert tortoise will take place. Winter rainfall for the 2009 winter season for North Vegas (Station 265705) was 1.78 inches according to the Western Regional Climate Center. Using the 2010 USFWS guidance document, protocol and population estimate equation, the total population of adult desert tortoise within the 2,000 acre solar facility boundary is fifty-one (51). The lower and higher 95% confidence interval for the estimate of tortoise abundance within the solar facility boundary (Buckland et al. 2001) is approximately 25 to 103, respectively. The equation used to calculate the estimated tortoise population within the solar facility boundary (N) is given below:

$$N = 26 / (.80 * .63)$$

Table 4-1:
Survey Results

Solar Field Boundary

Total burrows (class 1-3):	458
Total carcasses:	25
Total scats:	26
Total Tracks:	2
Total live tortoises*:	26
Total live juveniles	8

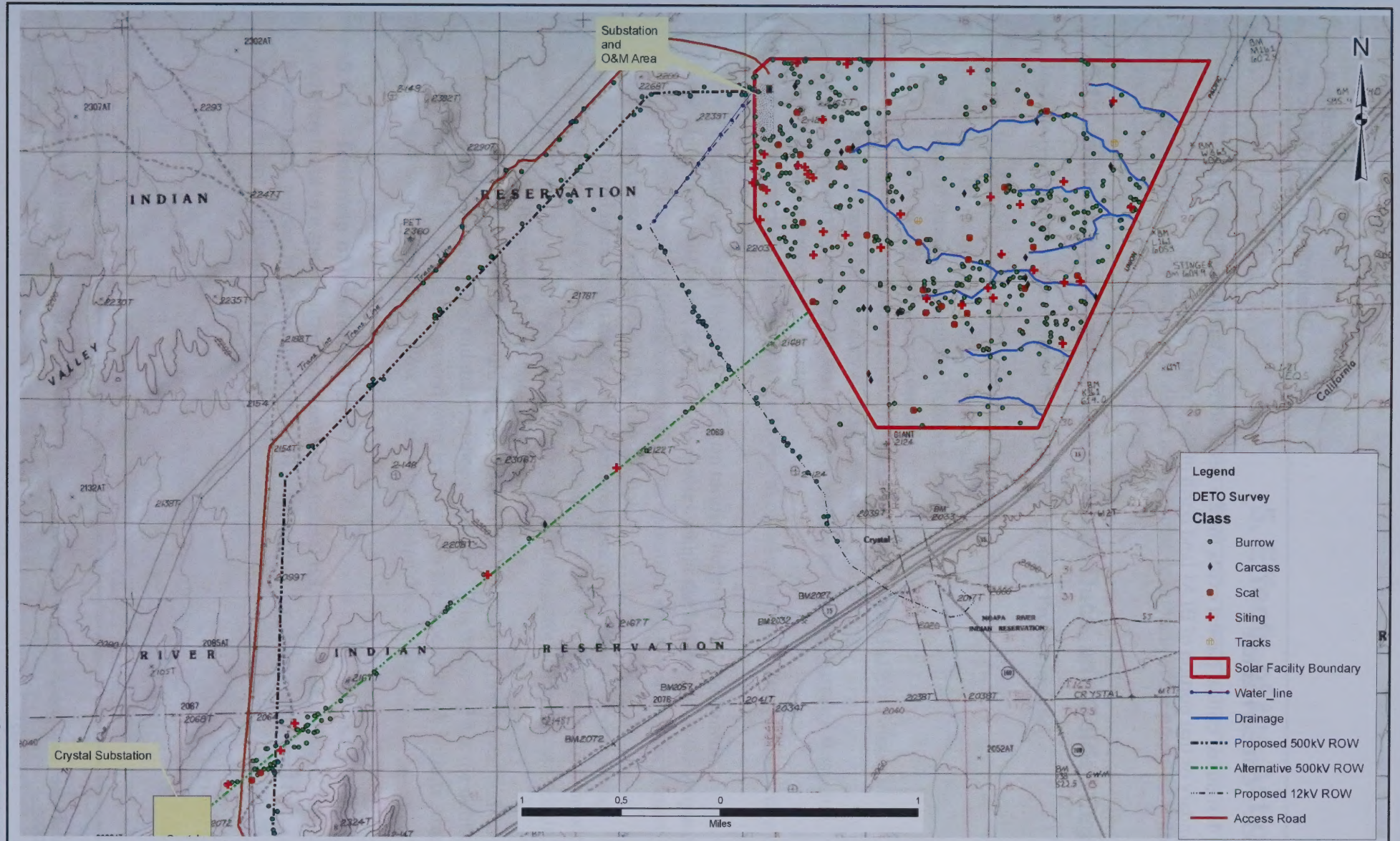
*adults >160mm carapace

Power Transmission Line ROW

Total burrows (class 1-3):	56
Total carcasses:	1
Total scats:	2
Total Tracks:	0
Total live tortoises:	5

Water Line ROW

Total burrows (class 1-3):	2
Total carcasses:	0
Total scats:	0
Total Tracks:	0
Total live tortoises:	0



MALCOLM PIRNIE

K Road Power
San Diego, California

K Road Moapa Solar Project

Moapa River Indian Reservation

Desert Tortoise
Survey Results

MALCOLM PIRNIE, INC.

December 2011

FIGURE 4-1

Map Document: Austin/692300/1/GIS/MXD/BLM Lands Figure 1

4.3.7. Critical Habitat

No designated critical habitat exists for the desert tortoise within the Reservation boundary or that portion of BLM land north of the Crystal substation.

5. Effects of the Action

The below sections will discuss the direct and cumulative impacts of the proposed action upon the desert tortoise and Golden Eagles.

5.1. Impacts on Desert Tortoise, Moapa Dace, and Golden Eagle

Impacts resulting from the implementation of the Proposed Project include:

- Incidental take desert tortoises;
- Loss of occupied desert tortoise habitat;
- Loss of foraging habitat for Golden Eagles;
- Constriction of movement corridors;
- Disturbance from vibration during construction that could affect tortoise in burrows near the boundary of the Proposed Project area;
- Temporary or permanent loss of desert tortoise habitat and burrows along and within the Proposed Project site;
- Temporary disturbance and displacement of desert tortoise during construction of the associated utilities;
- Potential noise and lighting effects on tortoise behavior and movement;
- Introduction of weeds and invasive species within the buffer area of the Proposed Project boundary during construction and operation, and therefore affect desert tortoise and Golden Eagle foraging habitat;
- Potential increases in ravens and other predators of desert tortoise occupying adjacent lands as a result of perches provided by the solar structures, transmission lines and towers, and perimeter fencing, and human introduction of trash within or near the Proposed Project boundary; and
- The Proposed Project would require 72 AFY for the construction period and up to 40 AFY for operating and maintenance activities. This water use has the unlikely potential to impact the groundwater levels within the Muddy River Springs Area and would decrease the flow of water into Moapa dace habitat.

5.1.1. Estimate of Incidental Take

A federal take of a species listed pursuant to the federal ESA is defined as "Take – to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct" (50 CFR 17.3).

Desert Tortoise

An estimated 25 to 103 desert tortoise occur within the Biological Assessment Area using 2010 USFWS protocol calculations. For planning purposes, construction of the Proposed Project may result in a federal take of up to 51 desert tortoise through harassment, direct mortality, and impacts on desert tortoise habitat. Desert tortoise exclusion fencing will be installed prior to construction and desert tortoise will be translocated via clearance surveys before the construction phase of the project. Translocation of desert tortoise can potentially represent take via harassment and/or mortality, as there is a possibility for tortoises to be killed or injured as a result of this process. A relocation area of approximately 6,000 acres has been identified and approved by the Tribe and USFWS in the northern section of the Reservation (Figure 2-3).

Golden Eagles

There is no suspected take of Golden Eagles.

Moapa Dace

The Proposed Project would require 72 AFY for the construction period and no more than 40 AFY for operating and maintenance activities. Water is needed for dust suppression during construction, PV panel cleaning during operation as well as for worker daily consumptive uses during operating and maintenance. For the operation phase of the Proposed Project, water will be required mainly for panel cleanings, facility dust control and worker consumptive uses.

Water would be supplied from one of the existing Reservation wells, TH-1, which is capable of producing more than 1,700 gpm of water. The Tribe has been permitted to 2,500 AFY of water by the State. The potential impacts of the Proposed Project's water withdrawal on area aquifers was evaluated in the Hydrogeologic and Groundwater Modeling Analysis for the Calpine Company Moapa Paiute Energy Center proposed project (Mifflin 2001) as well as a Programmatic Biological Opinion issues by the USFWS in 2005. The proposed energy project required 7,000 AFY of groundwater extraction from the California Wash hydrographic basin for purposes of electric power generation. The study uses various models/simulations to estimate 25- and 45-year drawdown and to assess the impacts of the proposed 7,000-AFY appropriation in the site area and hydrologic impacts in major spring areas.

The Proposed Project is using one of the wells from the same well field as analyzed in the Calpine proposed project Draft EIS (Well TH-1). Modeling results showed that there were no foreseen impacts to groundwater users given the depths to water in the region (hundreds of feet) and maximum drawdowns of only several feet (2 to 4 feet) for the life of the Calpine project (45 years).

Given the water needs for the Calpine proposed project was almost 100 times larger than the water requirement of the Proposed Project, it can be concluded that there would be no impacts to the area groundwater or discharge to neighboring springs, separately or cumulatively.

The Moapa dace would not be impacted as a result of groundwater use at the maximum levels stated for the Proposed Project.

5.1.2. Loss of Occupied Habitat

The Proposed Project description includes the installation of permanent desert tortoise exclusion fencing along the entire solar facility boundary (approximately 7.14 miles), utilizing gates and cattle guards (with ramps) at ingress/egress locations. Approximately 2,224 acres of occupied desert tortoise habitat would be disturbed or unavailable to desert tortoises as a result of the Proposed Project.

Construction equipment will not operate beyond the fenced boundary for the exception of the access road within the utility corridor. Roads that are not designated as open by the Applicant and Tribe are not to be used by project personnel unless accompanied by an authorized biologist. A map of the access route and designated haul road is found on Figure 2-2.

5.1.3. Constriction of Movement

The proposed solar facility is located atop a mesa that is bordered on the east by an existing railroad levee and to the north by a prominent ephemeral wash that drains from the westerly mountain range. This wash is well defined with steep sides and rock walls. The southern portion of the site is a rugged wash and 60 to 100 feet walls defining the mesa. The western portion is also well defined by the tall steep walls of the mesa. By relocating desert tortoises north and away from this area, it is assumed that all potential access to the site would be limited and rather difficult. Most movement activity is assumed to take place on the lower level topography around the mesa and west of the railroad tracks. There is an opportunity for a funneling effect between the exclusionary fence and the railroad levee for movement of desert tortoise from the north to the south (and vice versa) along the east side of the mesa and access road. Biological monitors would need to be in place along this access road during construction and/or temporary fencing utilized during the construction period to limit access through this corridor to minimize any impacts from vehicles during construction.

The addition of the 500kV transmission line within the existing utility corridor is not suspected to have an effect upon Golden Eagle flight path or cause mortality due to direct contact. The existing seven utility lines have been in place for over five years; the addition of a paralleling line should not result in flight mortality. The construction of the 12kV transmission line is miniscule in nature to the existing utilities and would only

stand 25-30 feet in height. Management measures to reduce predation from the 12kV line or wooden structures will be addressed in the ABPP.

5.1.4. Vibration

Equipment that will cause surface disturbance and otherwise operate during construction will be limited to what would be needed to develop dirt access roads that are generally at landform grades, equipment to install solar arrays and poles, trenching equipment for installation of cable and wiring and equipment to install the small operations building and the proposed electric substation. Given that the proposed solar facility sits upon a mesa and relocation of desert tortoise will be over 1,000 feet from the nearest boundary, it is unlikely that vibration will be noticeable or have an effect upon desert tortoise populations not located on the mesa. For areas outside of the exclusion fence and on the mesa, effects to desert tortoise and burrows from vibration are thought to be minimal and short term. Vibration is unlikely to be noticeable farther than a few tens of feet beyond the source of the vibration. Construction taking place near the perimeter edge of the exclusion fence is limited. Activity during operations will be substantially less than during Proposed Project construction, such that no adverse effects from ground vibration on desert tortoise are expected to occur during Proposed Project operations.

5.1.5. Dust

Solar module layout will be designed to minimize grading as much as practical. Dirt roads between the PV arrays will also be constructed for maintenance purposes. Construction activities and operational vehicle traffic on the roads within the Proposed Project could generate dust that would affect vegetation adjacent to the Proposed Project in the short-term, although long-term adverse effects on vegetation are not expected to occur. Due to the proposed solar facility being located upon a mesa, construction dust would be dissipated and most likely carried further given existing wind patterns. This would cause effect to a larger area; however, accumulations of dust at any specific location would be decreased. The buildup of dust on plant leaves could affect photosynthesis productivity and nutrient and water uptake resulting in loss of potential foraging plants for desert tortoise. It is assumed that this low level dusting effect during construction would be minimal and most likely washed away during rainstorms. Construction BMPs would be in place to monitor and decrease dust pollution if required by use of polymeric stabilizers in the soil or with frequent watering with water trucks or other means.

5.1.6. Temporary Loss of Desert Tortoise Territory

Partial loss to desert tortoise territory or habitat may result from the construction of the proposed one-mile water pipeline, the 5-mile 500kV and the 3-mile 12kV electric transmission lines. The water pipeline would be installed using trenching techniques that may impact existing burrows. This may be only a temporary loss given that the pipeline would be buried with 3-feet of cover; however, vegetation re-growth over the pipeline

would be slow. It is assumed that a 25-foot wide construction ROW would be utilized with a minimum 15-foot wide permanent easement. A short term loss (10-years), due to vegetation re-growth, of desert tortoise habitat on approximately 0.9 acres would occur; however, no overall loss to desert tortoise territory would occur as a result of the construction utility corridors.

Likewise, the electric transmission lines would most likely be constructed using direct burial of steel or wooden poles. The pole locations could directly affect existing desert tortoise burrows as well as impacts from access roads and construction vehicles. A short-term loss to desert tortoise habitat is assumed; however a loss to desert tortoise territory would only exist during the construction phase. Impacts from all Project components can be seen in Table 5-1. An estimated 94 acres of desert tortoise habitat would be temporarily impacted during the construction of the electric transmission lines. No permanent loss of territory would exist outside of the exclusion perimeter fence after construction of the transmission lines is complete.

Table 5-1:
Impacts from the Proposed Project

Facility	Acreage		Length	Width
Facilities Within Perimeter Fence				
Solar Facility	*2,000*		na	na
Solar Field (occupied by solar modules)	1,600			
Undeveloped Area	400.00			
500kV Transmission Line	5.0		1,452'	150'
34.5kV Collection Lines (within solar field)	Unknown (approximated at 3.0)			
O&M Area – Total	40		Variable	Variable
12kV Transmission Line to Travel Plaza	0.11		200'	25'
O&M Building	0.21		130'	70'
O&M Parking Area	0.10		130'	70'
O&M Laydown Area	20.00		925'	925'
Facility Substation	15.00		800'	800'
Internal Access Roads				
Perimeter Road (west side)	5.24		2.16 miles	20'
Solar Field Access Ways	42.66		22 miles	16'
Perimeter Fence	2.60		7.13 miles	3'
Subtotal		2,000		

Facility	Acreage		Length	Width
Facilities Outside Perimeter Fence				
Firebreak	17.28		7.13 miles	20'
Service Road (from county ROW)	22.86		~7.86 miles	16'-24'
Up to 500kV Transmission Line	100.00		5.50 miles	125' to 150'
Crystal substation Upgrades	0.92		200'	200'
Water Line	3.03		1 mile	25'
12kV Transmission Line to Travel Plaza	9.09		3.00 miles	25'
Subtotal		153.18		
Project Facilities Total Area		2,153.18		

5.1.7. Noise and Lighting

The existing noise conditions at the Proposed Project vary with distance from I-15 and the adjacent railroad. Current ambient 24 hour noise levels near the Proposed Project vary from 40 to nearly 58 decibels (dBA). The main sources currently found onsite are from vehicular traffic from I-15, railroad activity, and extended vehicular noise from the Moapa Travel Plaza located across I-15 approximately 3,000 feet south of the Proposed Project southern border. The highest level of current ambient noise is expected to center along these three sources, fading to the low range with increased distance from these sources.

To evaluate potential noise impacts due to Proposed Project construction, reference noise levels were obtained from the Construction Noise Handbook (Federal Highway Administration [FHWA] 2006) which provides a comprehensive assessment of noise levels from construction equipment. Based on the reference values in the guide and the list of construction equipment to be used on the Proposed Project, the loudest equipment would generally emit noise in the range of 80 to 85 dBA at 50 feet, with utilization factors of 16 to 50 percent that account for the time period the equipment would be used per an 10-hour work day. Noise at any specific receptor is typically dominated by the closest and loudest equipment. The type of construction equipment and the number of equipment pieces near any specific receptor location would vary over time.

Project operation will generate an increase in ambient noise of 10 to 20 dBA. The single tracker PV system is virtually silent. The amount of noise during operation will not represent a significant change from the current ambient levels.

Noise generated during construction is not a significant change from existing conditions near the interstate and the railroad, but does represent an increase at locations furthest from these sources towards the western and northwestern border of the Proposed Project.

Due to the site's overall elevation, it is expected that a 1,000-foot buffered area on the north and west boundaries may realize increased noise levels during the construction phase. Desert tortoises identified outside of the proposed solar facility boundary may also be considered tolerant of noise, given desert tortoise home range and vicinity to the interstate and railroad, and therefore, resident nearby and adjacent individuals would not be substantially affected by temporary construction noise levels.

Permanent lighting would be installed along the permanent solar facility road and within the substation and O&M area. Outside lighting would be installed on pole mounted lights within the O&M area. Lighting would be designed to provide minimum illumination needed to achieve objectives and not emit excessive light to the night sky, rather focus desired light in a downward direction. Lighting will not be erected within the solar field; however, truck-mounted lights may be used at night for maintenance or to provide security measures when needed.

Known or suspected nesting sites for Golden Eagles are located in the Arrowhead Canyon 8-10 miles west of the Proposed Project. Noise and lighting would not have a significant impact to nest abandonment as a result of increased noise and light at the site during construction or permanent operations due to the distance of the Proposed Project from potential nesting areas.

5.1.8. Edge Effects

The edge effect in ecology is the effect of the juxtaposition or placing side by side of contrasting environments on an ecosystem. This term is commonly used in conjunction with the boundary between natural habitats and disturbed or developed land. The Proposed Project includes placement of a permanent exclusionary fence and fire break along the solar facility boundary for the life of the Proposed Project. Other than impacted burrows or desert tortoises that need to be relocated during fence construction we assume that there will be no permanent or long term edge effects as a result of the Proposed Project. The fence may create roosting sites for ravens or birds of prey however; given that the site is located upon a mesa with steep sides that acts as a natural barrier to small animal movement and creates a vertical and linear expanse to the desert floor below, it is assumed that predation would not increase to general wildlife or desert tortoise specifically.

5.1.9. Introduction of Weeds and Invasive Species

Introduction of weeds and invasive species to the Proposed Project and surrounding area will be controlled using a weed management plan and will prevent the spread/ colonization of weeds onsite and off-site. Given the topological variance between the Proposed Project and surrounding area it is likely that introduced species could spread to the surrounding area (windborn). Invasive species could be introduced to the area via transport by construction vehicles and equipment. The ground would be disturbed during

construction, shading would be provided by the PV structures and water may be available in small quantities during washing of the solar panels. The weed management plan will identify management and operational practice to avoid the introduction or spread of existing invasive species within the Proposed Project area. The goal of this plan would be to minimize potential effects from weeds and invasive species within the Proposed Project and adjacent lands, as well as to avoid adverse effects on desert tortoise forage habitat off-site. Implementation of this plan would result in no adverse effects on desert tortoise or Golden Eagles from weeds or invasive species within the Proposed Project or in adjacent lands.

5.1.10. Attraction of Human Subsidized Predators

Commensal predators such as the common raven (*Corvus corax*) benefit from a myriad of resource subsidies provided by human activities as a result of substantial development within the desert as compared to undeveloped desert landscapes (Boarman et al. 2006). These subsidies can include food (e.g. garbage), water (e.g. detention ponds), nesting substrates (e.g. transmission lines and fencing), and safety from inclement weather or predators (e.g. office buildings). Raven and other predators may be attracted to the PV structures as well as perimeter fencing, transmission line and poles, and operational buildings onsite. There will not be an increase of food and water at the PV structures. There is some potential for increased sources of food or water at the operations building or facilities where people will concentrate; however, an agency approved ABPP will be developed prior to the initiation of construction activities which will reduce or eliminate potential raven (or other avian predators) related impacts to desert tortoise. Education regarding control of food/trash sources and minimization of water resources and potential 'perching' areas is the main focus of the plan.

The effect of attracting human subsidized predators could extend to the adjacent lands immediately surrounding the Proposed Project and beyond. This impact is potentially significant. An ABPP will be created and approved by the BIA, Tribe, and USFWS prior to ground disturbing activities. At a minimum, this plan will describe methods for adaptive management to control potential adverse effects from avian predators and contain measures to mitigate this potential impact.

5.2. Cumulative Effects Analysis

Cumulative effects are effects resulting from future Tribe, State or private activities, not involving Federal activities that are reasonably certain to occur within the action area of the Federal action subject to consultation. This step is necessary only if listed resources will be adversely affected and Formal Consultation is necessary (USFWS 2011b).

Because the Tribe (BIA), BLM and NPS administer much of the land surrounding the Proposed Project, many of the actions that are reasonably expected to occur would be subject to the requirements of Section 7 consultation. The Tribe has no future projects

planned for the area surrounding the Proposed Project that would not incorporate BIA as the lead agency; therefore, the cumulative effects analysis is not warranted.

6. Determination of Effect

The implementation of the Proposed Project may affect, and is likely to adversely affect the desert tortoise. Take would occur in the form of harassment, potential mortality, and loss of occupied habitat. Implementation of a Translocation Plan, ABPP and exclusionary fencing is intended to minimize direct mortality of desert tortoise. Based on the amount of suitable habitat that would be impacted and estimated population based on 100 percent desert tortoise surveys, within the solar facility boundary, approximately 51 desert tortoise (2010 USFWS guidance document protocol estimate with a 95 percent confidence range of 25 to 103 individuals) and 2,224 acres of potential tortoise habitat may be affected by the Proposed Project.

The Proposed Project may affect, but is not likely to adversely affect Golden Eagles due to the distance to suspected nesting locations and loss of only 2,000 acres of potential foraging area.

The Proposed Project may affect, but is not likely to adversely affect the Moapa dace due to the distance of the project from their known habitats; however, groundwater pumping activities associated with the action are interrelated. The effects of the proposed groundwater pumping associated with the project on the Moapa dace were previously analyzed in the Programmatic Biological Opinion, which evaluated the effects of the cumulative groundwater withdrawal of 16,100 AFY from the carbonate aquifer in Coyote Spring Valley and California Wash on the endangered Moapa dace.

The anticipated effects from this Proposed Project are consistent with those anticipated in the Programmatic Biological Opinion. The use of 72 AFY (max for construction) out of the 16,100 AFY for the Proposed Project will independently have no significant impact on the Muddy River Springs area discharge and subsequently the Moapa dace. The Proposed Projects groundwater withdrawal is within the scope of analysis in the Programmatic Biological Opinion and represents approximately 0.44 percent (72 AFY/ 16,100 AFY) of the level of groundwater use identified in the 2005 Programmatic Biological Opinion. Modeling results showed that there were no foreseen impacts to groundwater users given the depths to water in the region of hundreds of feet and maximum draw downs of only several feet (2 to 4 feet) for the life of the Calpine Project (45 years). Therefore, the Proposed Project is likely to have minimal or no affect on the Moapa dace, given the reduced amount of water (72 AFY) required for the Proposed Project.

7. References

Arizona Game and Fish Department (AGFD). 2001. *Gopherus agassizii*. Unpublished abstract compiled and edited by the Heritage Data management System, Arizona Game and Fish Department, Phoenix, Arizona. 8p. Internet site: http://www.gf.state.az.us/w_c/edits/documents/Gophagas.fi_001.pdf. Accessed: February 2011.

Benson, L. and R. A. Darrow. 1981. Trees and shrubs of the southwestern deserts. University of Arizona Press. Tucson, AZ.

Berry, K.H. 1986. Desert tortoise *(Gopherus agassizzii)* research in California, 1976-1985. Herpetologica 42 (1):62-67.

Berry, K.H. 1990 (as amended). The status of the desert tortoise in California in 1989.U.S. Bureau of Land Management, Riverside, California; amended to include data from 1990, 1991, and 1992.

BLM, USFWS, and California Department of Fish and Game. 1989. Environmental Assessment for Selected Control of the Common Raven to Reduce Desert Tortoise Predation in the Mojave Desert, California. Bureau of Land Management, Riverside, California.

BLM. 2010. Proposed Pony Express RMP Amendment and Final EIS for the UNEV Pipeline http://www.blm.gov/ut/st/en/prog/more/lands_and_realty/unev_pipeline_eis/unev_final_eis.html

Boarman et al. 2006. Ecology of a population of subsidized predators: Common ravens in the central Mojave Desert, California. Journal of Arid Environments 67 (2006) 248–261

Bradford, D.F., J.R. Jaeger, and R.D. Jennings. 2004. Population status and distribution of a decimated amphibian, the relict leopard frog (*Rana onca*). The Southwestern Naturalist 49(2):218-228.

Bramble, D.M. 1971. Functional Morphology, Evolution, and Paleontology of Gopher Tortoises. PhD Dissertation. U.C. Berkeley.

Buckland, S.T., Anderson, D.R., Burnham, K.P., Laake, J.L., Borchers, D.L. and Thomas, L. 2001. Introduction to distance sampling. Oxford University Press, Oxford, UK.

Center for Biological Diversity (CBD). 1998. Species assessment for yellow billed cuckoo. Website accessed on Decmeber 12, 2010. Available at: http://biologicaldiversity.org/

Center for Biological Diversity and Southern Utah Wilderness Alliance. 2002. Petition to list the relict leopard frog as an endangered species under the Endangered Species Act. Submitted to the Secretary of Interior, May 8, 2002.

Coburn, M.M., and T.M. Cavender. 1992. Interrelationships ofNorth American cyprinid fishes. Pages 328-373 *in* Systematics, Historical Ecology, and North American Freshwater Fishes. RL. Mayden (ed.). Stanford University Press, Stanford, California.

Cross, J.N. 1976. Status ofthe native fish fauna ofthe Moapa River (Clark County, Nevada). Transactions ofthe American Fisheries Society 105(4): 503-508.

Crumley, C.R. 1994. Phylogenetic systematic of North American tortoises (genus *Gopherus*):Evidence for the classification. Page 7-32 *In:* Biology of North American Tortoises, R.B. Bury and D.J. Germano, eds. Fish and Wildlife Research Publication #13.

D'Antonio, C. M. and P. M. Vitousek. 1992. Biological invasions by exotic grasses, the grass/fire cycle, and global change. Ann. Rev. Ecol. Syst. 23:63–87.

Deacon, J.E., and W.G. Bradley. 1972. Ecological distribution of fishes of Moapa (Muddy) River in Clark County, Nevada. Transactions of the American Fisheries Society 101(3):408-419.

Eddleman, W.R. 1989. Biology of the Yuma clapper rail in the southwestern U.S. and Northwestern Mexico. Final Report to Bureau of Reclamation, Yuma Projects Office and Fish and Wildlife Service, Region 2. Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming. 127 pp.

Ernst, C.H., J.E. Lovich and R.W. Barbour. 1994. Turtles of the United States and Canada. Smithsonian Institution Press, Washington.

Farrell, J.P. 1989. Natural history observations of raven behavior and predation on desert tortoises. Proceedings of the Symposium of the Desert Tortoise Council 1989.

Federal Highway Administration. 2006. Construction Noise Handbook. Website accessed on Decmeber 18, 2010. Available at: http://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/

Germano, D.J., R.B. Bury, T.C. Esque, T.H. Fritts and P.A. Medica. 1994. Range and habitats of the desert tortoise. Pages 73-84 *in* Biology of North American

Tortoises, R.B. Bury and D.J. Germano, eds. U.S. Department of the Interior, Fish and Wildlife Research Publication #13.

Gucker, Corey L. 2006. Yucca brevifolia. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2011, September 8].

Heckman, R.A. 1988. Presence ofthe Asian fish tapeworm, *(Bothriocephalus acheilognathi),* in the Moapa-MuddyRiver area, Nevada. Brigham Young University, Provo, Utah. 6 pp.

Holland, R.F., 1986. Preliminary descriptions of the terrestrial natural communities of California. State of California, The Resources Agency, Nongame Heritage Program, Dept. Fish & Game, Sacramento, Calif. 156 pp.

Hubbs, C.L., and R.R. Miller. 1948. Two new, relict genera of cyprinid fishes from Nevada. University of Michigan Museum ofZoology Occasional Paper 507:1-30.

Hubbs, C.L., and J.E. Deacoa 1964. Additional introductions of tropical fishes into southern Nevada. SouthwesternNaturalist 9(4):249-25 1.

Jennings, M.R. 1987. *Rana onca* Cope, relict leopard frog. Catalogue of American Amphibians and Reptiles 417:1-2.

La Rivers, I. 1962. Fishes and fisheries ofNevada. Nevada Fish and Game Commission, Reno. 782 pp.

Lamb, T., J.C. Avise, and J.W. Gibbons. 1989. Phylogeographic patterns in mitochondrial DNA of the desert tortoise (*Xerobates agassizii*), and evolutionary relationships among North American gopher tortoises. Evolution 43:76-87.

Lawler, H.E. No date. A Natural History of the Desert Tortoise, *Gopherus [Xerobates] agassizii*. International BioPark Internet site: http://www.biopark.org/Destort1.html. Accessed: June 12, 2011.

Longwell, C. R., E. H. Pampeyan, B. Bowyer, and R. J. Roberts. 1965. Geology and mineral deposits of Clark County, Nevada. Nevada Bureau of Mines Bulletin 62: 1-208.

Lovich, J. 1999. Synopsis of conservation information on the desert tortoise. U.S. Geological Survey, Western Ecological Research Center Internet site: http://www.werc.usgs.gov/hq/synopsis.htm. Accessed: May 9, 2011.

Mifflin and Associate, Inc., February 2001, *Hydrogeologic and Groundwater Modeling Analyses for the Moapa Paiute Energy Center*, Moapa Indian Reservation, Clark County, Nevada

Miller, R. R. and C. L. Hubbs. 1960. The spiny-rayed Cyprinid fishes (Plagopterini) of the Colorado River System. Miscellaneous Publications. Museum of Zoology, University of Michigan, No. 115.

Mortimore, C. and P. Schneider. 1983. Population studies of the desert tortoise (*Gopherus agassizii*) in the Piute Valley study plot of southern Nevada. Unpublished report to NDOW.

National Park Service. 2001. Management policies. U. S. Government Printing Office. Washington, D. C., USA.

Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. 2007. Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed: March 2011.

Ono, RD., J.D. Williams, and N Wagner. 1983. Vanishing fishes of North America. Stone Wall Press, Washington, D.C. 25'7 pp.

PBS&J. 2001. Moapa Paiute Energy Center Supplemental Draft Environmental Impact Statement. Volume I. BLM Case No. N-66776.

Scoppettone, G.G. 1993. Interactions between native and normative fishes of the upper Muddy River, Nevada. Transactions of the American Fisheries Society 122:599-608.

Scoppettone, G.G., H.L. Burge, P.L. Tuttle, M. Parker, and N.K. Parker. 1987. Life history and status of the Moapa dace *(Moapa coriacea).* U.S. Fish and Wildlife Service, National Fisheries Research Center, Seattle, Washington. 77 pp.

Scoppettone, GG., H.L. Burge, and P.L. Tuttle. 1992. Life history, abundance, and distribution of Moapa dace *(Moapa coriacea).* Great Basin Naturalist 52(3):21 6-225.

Scrugham, J.G. 1920. Order ofdetermination ofrelative rights to the Muddy River and its tributaries. Judgement and Decree, Case No. 377. State Engineer, Carson City, Nevada. 23 pp. + exhibits.

Spangenberg, E. K. 1995. Movement and dispersal orientation of neonatal and juvenile desert tortoises. Herpetological Monographs.

Stebbins, R.C. 2003. A Field Guide to Western Reptiles and Amphibians, Third Edition. 544 p.

Stewart, J.H. and E. Carlson. 1977. Million-Scale Geologic Map of Nevada. Nevada Bureau of Mines and Geology: Map 57. Mackay School of Mines, University of Nevada, Reno.

Todd, R.L. 1986. A saltwater marsh hen in Arizona. A history of the Yuma clapper rail (*Rallus longirostris yumanensis*). Completion Report Federal Aid Project W-95-R. Arizona Game and Fish Department, Phoenix. 290 pp.

Tracy, C.R. 2001. Recovering the Desert Tortoise with Science and creative management. University of Nevada Biological Resources Research Center Internet site: http://www.brrc.unr.edu/data/ docs/nbisp96/nbitort.html. Accessed: March 2011.

University of Michigan Museum of Zoology (UMMZ). 1994. Collection records of the Division of Fishes. Ann Arbor, Michigan.

U.S. Fish and Wildlife Service (USFWS). 1983. Moapa Dace Recovery Plan. Portland, Oregon. 32 pp.

U.S. Fish and Wildlife Service (USFWS). 1986. Some parasites and diseases of warm water fishes. Research and Development Fish and Wildlife Leaflet 6. Fish Farming Experimental Station, Stuttgart, Arkansas. 22 pp.

U.S. Fish and Wildlife Service (USFWS). 1989. Wildlife Inventory Plan, Moapa Valley National Wildlife Refuge. Desert National Wildlife Refuge Complex Las Vegas, Nevada. 4 pp.

U. S. Fish and Wildlife Service (USFWS). 1991. Endangered and threatened wildlife and plants: the razorback sucker (*Xryauchen texanus*). Determined to be an endangered species. Federal Register 56 (205): 54957-54967.

U.S. Fish and Wildlife Service (USFWS). 1994. Federal Register, Department of Interior, Fish and Wildlife Services. Rules and Regulations. Determination of Critical Habitat for the Mojave Population of the Desert Tortoise; Final Rule. 50 CFR Part 17.59 FR 5820-5866.

U. S. Fish and Wildlife Service (USFWS). 1995a. Region 1. Report on conservation actions undertaken during 1993 for federally listed and candidate fishes and other aquatic species in California, Idaho, Nevada, and Oregon. Proc. Desert Fishes Council. pp. 6-11.

U.S. Fish and Wildlife Service (USFWS). 1995b. Virgin River Fishes Recovery Plan. Denver, Colorado. 45 pp.

U.S. Fish and Wildlife Service (USFWS). 1995c. Recovery Plan for the rare Aquatic Species of the Muddy River Ecosystem. Portland, Oregon

U.S. Fish and Wildlife Service (USFWS). 2006. Biological Opinion for the Proposed Coyote Springs Investment Development in Clark County, Nevada (Army Corps of Engineers Permit Application No. 2001225042) (*File No. 1-5-05-FW-536 Tier 1)*, St George Regulatory Office, Grand Junction, Colorado.

U. S. Fish and Wildlife Service (USFWS). 2010. Preparing for any action that may occur within the range of the Mojave Desert Tortoise (Gopherus Agassizii). USFWS Desert Tortoise Recovery Office. Reno, Nevada. 18 pages.

U. S. Fish and Wildlife Service (USFWS). 2011a. Translocation of Desert Tortoises (Mojave Population) from Project Sites: Plan Development Guidance. 26 pages.

U. S. Fish and Wildlife Service (USFWS). 2011b. Section 7 Consultation – Guidance for Preparing a Biological Assessment. http://www.fws.gov/midwest/endangered/section7/ba_guide.html Accessed August 26, 2011.

U.S. Fish and Wildlife Service (USFWS). 2011c. Revised recovery plan for the Mojave population of the desert tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 222 pp.

U.S. Fish and Wildlife Service (USFWS). 2012. Species Profile, Moapa dace (*Moapa coriacea*) http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E002

Western Area Power Administration. 2010. Southwest Intertie Project (SWIP) http://www.wapa.gov/dsw/environment/SWIP-South/DEIS-Summary.pdf

Wilson, B.L., J.E. Deacon, and W.G. Bradley. 1966. Parasitism in the fishes of the Moapa River, Clark County, Nevada. Transactions of the California-Nevada Section of the Wildlife Society 1966:12-23.

APPENDIX A

PHOTOLOG

This page intended to be blank.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
K Road Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
1	10/18/10

Direction Photo Taken:

Description:

Desert tortoise found on site.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
K Road Solar Project	Moapa Reservation Clark County, Nevada	6923001

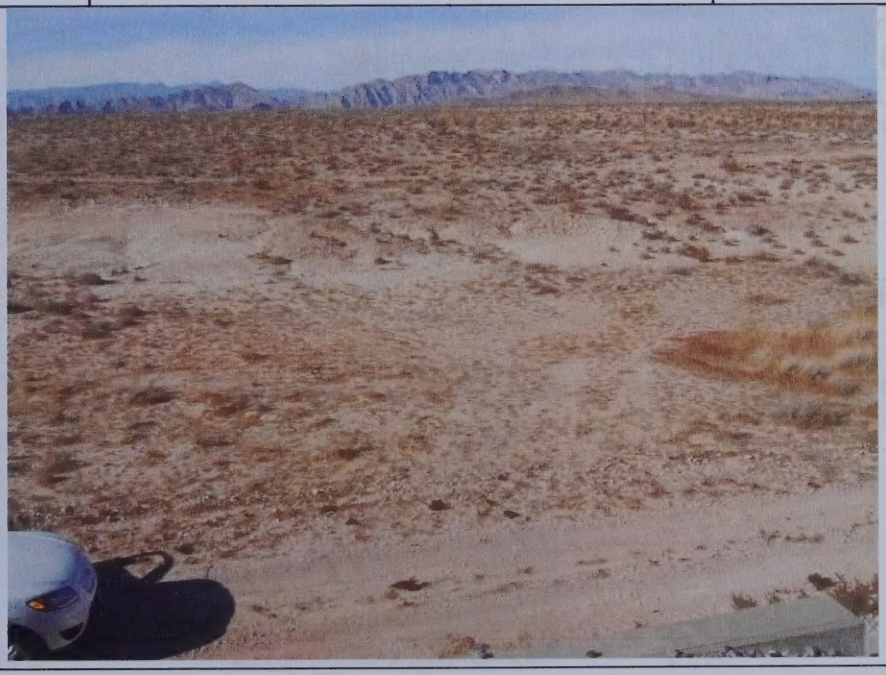
Photo No.	Date:
2	12/13/10

Direction Photo Taken:
West

Description:

Drainage 2.

Looking west from the Railroad culvert across the site. Notice lack of bed and bank near the east side of drainage.



ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
K Road Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
3	10/18/10

Direction Photo Taken:

Description:

Example of desert tortoise in burrow.

ARCADIS

PHOTOGRAPHIC LOG

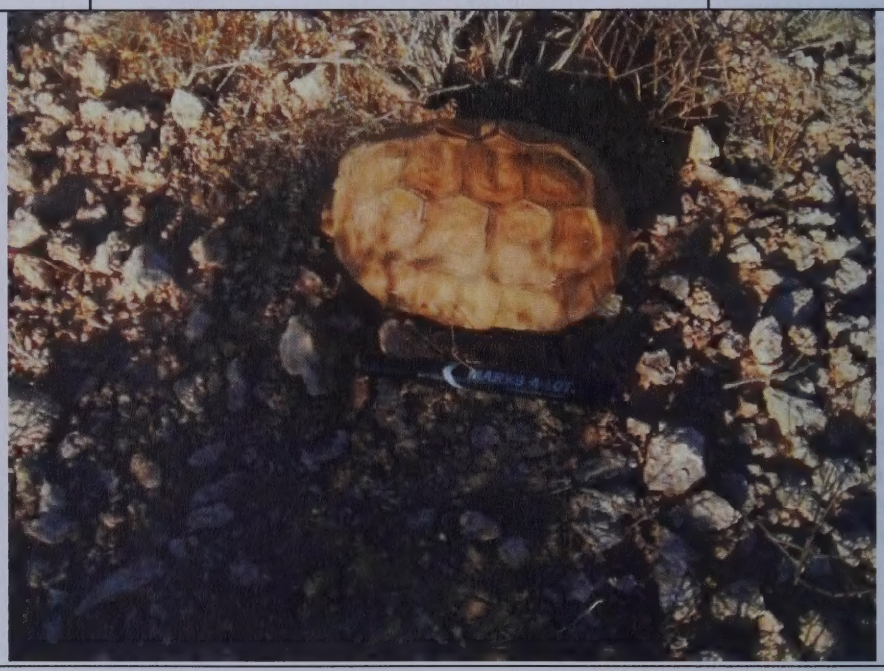
Property Name:	Location:	Project No.
K Road Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
4	10/14/10

Direction Photo Taken:

Description:

Desert tortoise carcass onsite.



ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
K Road Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
5	10/18/10

Direction Photo Taken:
East

Description:

Typical creosote – white bursage habitat.

Looking from the site boundary across the site.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
K Road Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
6	12/13/10

Direction Photo Taken:

Description:

Typical desert tortoise burrow in caliche type habitat.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
K Road Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
7	10/16/10

Direction Photo Taken:

Description:

Juvenile desert tortoise found onsite.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
K Road Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
8	12/13/10

Direction Photo Taken:
West

Description:

Drainage 3.
Looking from the site boundary across the site. Note caliche soil type and homogeneous creosote – white bursage vegetation.

APPENDIX B

CLARK COUNTY THREATENED AND ENDANGERED SPECIES LIST

This page intended to be blank.

Clark County, Nevada – ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES (Updated August 5, 2011 from the USFWS website)

Amphibian		
C	Relict leopard frog	*Rana onca*
Birds		
E	Southwestern willow flycatcher •	*Empidonax traillii extimus*
C	Yellow-billed cuckoo (Western U.S. Distinct Population Segment)	*Coccyzus americanus*
E	Yuma clapper rail	*Rallus longirostris yumanensis*
Invertebrate		
C	Mt. Charleston blue butterfly	*Icaricia shasta charlestonensis*
Fishes		
E	Bonytail chub •	*Gila elegans*
E	Colorado pikeminnow *	*Ptychocheilus lucius*
E	Humpback chub *	*Gila cypha*
T	Lahontan cutthroat trout	*Oncorhynchus clarkii henshawi*
E	Moapa dace	*Moapa coriacea*
E	Pahrump poolfish	*Empetrichthys latos*
E	Razorback sucker •	*Xyrauchen texanus*
E	Virgin River chub + •	*Gila seminuda*
E	Woundfin •	*Plagopterus argentissimus*
Plant		
C	Las Vegas Buckwheat	*Eriogonum corymbosum* var . *nilesil*
Reptile		
T	Desert tortoise (Mojave population) •	*Gopherus agassizii*

E = Endangered
T = Threatened
C = Candidate
Δ = Proposed for delisting
• = Designated Critical Habitat in County
* = Believed extirpated from Nevada
+ = Endangered only in the Virgin River, Muddy River population is a sensitive species

This page intended to be blank.

Appendix K

U.S. Army Corps of Engineers Jurisdictional Determination Report and Consultation

This page intended to be blank.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

July 1, 2011

Regulatory Division SPK-2011-00060-SG

Scott Walker
Malcolm Pirnie
100 Congress Avenue
Austin, Texas 78701

Dear Mr. Walker:

This concerns your proposed K Road Moapa Solar project in or near California Wash. The project is located on or near California Wash, Section 35, Township 16 S, Range 64 E, Mount Diablo Meridian, Latitude 36.502737145477°, Longitude -114.795970900769°, Moapa, Clark County, Nevada.

Based on the information you have provided, we have determined that the proposed work will not result in the discharge of dredged or fill material within waters of the United States. Therefore, a Department of the Army Permit is not required for this work. Measures should be taken to prevent construction materials and/or activities from entering any waters of the United States. Appropriate soil erosion and sediment controls should be implemented onsite to achieve this end.

Our disclaimer of jurisdiction is only for this activity as it pertains to Section 404 of the Federal Clean Water Act and does not refer to, nor affect jurisdiction over any waters present on site. Other Federal, State, and local laws may apply to your activities. Therefore, in addition to contacting other Federal and local agencies, you should also contact state regulatory authorities to determine whether your activities may require other authorizations or permits.

We appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the customer survey at http://per2.nwp.usace.army.mil/survey.html and select Sacramento District – St. George Office on page 2 of the survey form.

Please refer to identification number SPK-2011-00060-SG in any correspondence concerning this project. If you have any questions, please contact Patricia Mcqueary at 321 North Mall Drive, Suite L-101, St. George, Utah 84790, email *Patricia.L.McQueary@usace.army.mil*, or telephone 435-986-3979. For more information regarding our program, please visit our website at *www.spk.usace.army.mil/regulatory.html*.

Sincerely,

Patricia L. McQueary
Chief, St. George Regulatory Office
Sacramento District

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

July 1, 2011

Regulatory Division SPK-2011-00060-SG

Scott Walker
Malcolm Pirnie
100 Congress Avenue
Austin, Texas 78701

Dear Mr. Walker:

We are responding to your February 15, 2011 request for an approved jurisdictional determination for the K Road Moapa Solar project. The approximately 2000-acre site is located on or near California Wash, Section 35, Township 16 S, Range 64 E, Mount Diablo Meridian, Latitude 36.502°, Longitude -114.7959°, Moapa, Clark County, Nevada.

Based on available information, **we concur with the findings of Malcolm Pirnie in the "Preliminary Jurisdictional Determination Report for the K Road Solar Project on the Moapa River Indian Reservation" dated February 2011**. The waters identified as D1-D6 in the above document were determined to be non-jurisdictional based on guidance found in "**U.S. Army Corps of Engineers Jurisdictional Determination (JD) Form Instructional Guidebook" and "A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States**". These waters do not meet the definition of "Waters of the U.S." and because of a lack of an ordinary high water mark, defined bed and bank, and lack of a connection to downstream sources, these waters are not currently regulated by the Corps of Engineers. This disclaimer of jurisdiction is only for Section 404 of the Federal Clean Water Act. Other Federal, State, and local laws may apply to your activities. In particular, you may need authorization from the U.S. Fish and Wildlife Service.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This letter contains an approved jurisdictional determination for your subject site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331.

A Notification of Appeal Process (NAP) and Request for Appeal (RFA) form is enclosed. If you request to appeal this determination you must submit a completed RFA form to the South Pacific Division Office at the following address: Administrative Appeal Review Officer, Army Corps of Engineers, South Pacific Division, CESPD-PDS-O, 1455 Market Street, San Francisco, California 94103-1399, Telephone: 415-503-6574, FAX: 415-503-6646.

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the NAP. Should you decide to submit an RFA form, it must be received at the above address by 60 days from the date of this letter. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This determination has been conducted to identify the limits of Corps of Engineers' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

We appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the customer survey at http://per2.nwp.usace.army.mil/survey.html and select Sacramento District – St. George Office on page 2 of the survey form.

Please refer to identification number SPK-2011-00060-SG in any correspondence concerning this project. If you have any questions, please contact Patricia Mcqueary at 321 North Mall Drive, Suite L-101, St. George, Utah 84790, email *Patricia.L.McQueary@usace.army.mil*, or telephone 435-986-3979. For more information regarding our program, please visit our website at *www.spk.usace.army.mil/regulatory.html*.

Sincerely,

Patricia L. McQueary
Chief, St. George Regulatory Office
Sacramento District

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: K Road Solar Power	File No.: SPK-2011-00060-SG	Date: July 1, 2011

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at *http://www.usace.army.mil/inet/functions/cw/cecwo/reg* or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: Patricia Mcqueary Regulatory Project Manager U.S. Army Corps of Engineers 321 N Mall Drive, Suite L-101, St. George, Utah 84790 Phone: 435-986-3979, FAX 435-986-3981 Email: Patricia.L.McQueary@usace.army.mil (Use this address for submittals to the **district** engineer)	If you only have questions regarding the appeal process you may also contact: Thomas J. Cavanaugh Administrative Appeal Review Officer U.S. Army Corps of Engineers 1455 Market Street San Francisco, California 94103-1399 Phone: 415-503-6574, FAX 415-503-6646) Email: Thomas.J.Cavanaugh@usace.army.mil (Use this address for submittals to the **division** engineer)

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

K Road Solar Power

• San Diego, California

Preliminary Jurisdictional Determination Report

February 2011

Report Prepared By:

Malcolm Pirnie, Inc.

100 Congress Ave.
Suite 1485
Austin, Texas 78701

6923001

MALCOLM PIRNIE

This page intended to be blank.

Contents

1. Introduction 1-1

2. Determination Methods 2-1

2.1. Existing Information 2-1
2.2. USGS 7.5' Topographic Survey 2-2
2.3. National Wetlands Inventory 2-2
2.4. Climate 2-2
2.5. Vegetation 2-3
2.6. Clark County Soil Survey 2-3
2.7. Site photographs 2-4
2.8. Pertinent Supreme Court Decisions 2-4

3. Determination Results 3-1

3.1. Traditional Navigable Waters 3-1
3.2. Relatively Permanent Waters 3-1
3.3. Non-relatively Permanent Waters 3-1
3.4. Drainages 3-1

4. Summary 4-1

5. References 5-1

List of Tables

Table 3-1: Preliminary Jurisdictional Waters 3-3
Table 3-2: Watershed Acres Associated with Each Drainage 3-3

Appendices

Appendix A: Figures
- Figure 1: Site Vicinity Map
- Figure 2: USGS Topography Map
- Figure 3: Clark County Soil Survey
- Figure 4: Photographic Location Map
- Figure 5: Jurisdictional Waters Map
- Figure 6: Watershed Areas Associated with Drainages

Appendix B: Site Photographs
Appendix C: OHWM Data Sheets
Appendix D: Jurisdictional Determination Form

1. Introduction

This report describes the results of a preliminary jurisdictional determination conducted within the 2,000-acre K Road Solar Project area. A preliminary jurisdiction determination is used to identify and map the extent of the wetlands and waters of the United States (U.S.) and to provide information regarding jurisdictional issues. The proposed project is located in its entirety on undeveloped lands within the boundaries of the Moapa Indian Reservation approximately 30 miles north of Las Vegas, Nevada (see Appendix A, Figures 1 and 2). The proposed project is the construction, operation, and maintenance of up to 350 megawatts (MW) of capacity solar power generating facility.

The purpose of this report is to provide the results of the delineation of wetlands and non-wetland waters of the U.S. under the jurisdiction of the U.S. Army Corps of Engineers (USACE) with respect to the Clean Water Act that occur in the survey area, assess impacts, and propose mitigation for the Solar Project. Methods for delineating potentially jurisdictional areas followed guidelines set forth by the USACE, including the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 1987, 2006) and A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (USACE 2008).

This page intended to be blank.

2. Determination Methods

Wetland determination methods followed guidelines outlined in the USACE *Wetlands Delineation Manual* (USACE 1987). Malcolm Pirnie used the Routine Wetland Determination Method provided in the USACE manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. Ordinary High Water Mark determinations were based on A Field Guide to the Identification of the OHWM in the Arid West Region of the Western United States and guidelines outlined in the USACE *Ordinary High Water Mark Identification* regulatory guidance letter (USACE 2005). A review of resource maps was performed to prepare for the field work.

An ordinary high watermark is defined as:

> . . . that line on the shore established by the fluctuations of water and indicated by physical characteristics such as [a] clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas (33 CFR Part 328.3).

A pedestrian survey was completed for the entire project area. All mapping of potentially jurisdictional features was based on data collected with a sub-meter Global Positioning System (GPS) unit and in-house geographic information system (GIS) processing.

2.1. Existing Information

The proposed project is located in the Basin and Range physiographic province in the north central portion of the Mojave Desert. Basin and Range structure in the Mojave Desert is characterized by rather abrupt mountain ranges, generally of moderate height, that consist primarily of exposed bedrock that is deeply cut by ravines, and is surrounded by aprons of pediments and/or low-profile bajada slopes, which drain to interior closed basins. This interior drainage with no outlets results in the formation of evaporite playa lakes, such as Dry Lake south of the proposed project, in the valley bottoms (Benson and Darrow 1981; Longwell et al. 1965).

The proposed project is situated in the north end of the Dry Lake Valley. The mountains bounding the Dry Lake Valley include the Arrow Canyon Range to the west, Dry Lake Range to the south and North Muddy Mountains to the east. The Arrow Canyon Range is comprised primarily of carbonate rocks of the Bird Spring Formation that are Ordovician to Permian in age (Longwell et al. 1965). Elevations of the project range from

approximately 2,038 feet at the intersection of the main Project access road at Interstate Highway 15 to 2,200 feet.

Site soils are generally shallow, rarely in excess of 18 inches in depth, even in areas away from the base of the mountains, and are typically about 4 inches in depth over an underlying caliche layer. The poorly developed soils, almost completely absent in some areas, are mostly clayey sands, usually with abundant caliche-coated rocks present. Near the base of the Arrow Canyon Range the valley fills give way to bedrock pediment and eventually to an abrupt upward change in slope at the base of the core of the mountain where benched outcrops of sedimentary facies are exposed. On the core of the mountain, shallow soils are typically present only in small areas where the gradient is less steep.

2.2. USGS 7.5' Topographic Survey

The shape of the area is an irregular pentagon with drainage that flows from West to East, exiting the watershed via five culverts, flowing into two separate drainages and emptying into the California Wash (a blue lined stream on the USGS map), approximately 20,000 feet east of the site. The California Wash flows into the Muddy River, 63,000 feet northeast of the project site. The area is hydrologically precluded from the normal watershed by the Union Pacific Railroad and Interstate 15. Water flows off the project site via 5 culverts (Culverts 1-5 on Figure 2 in Appendix A).

2.3. National Wetlands Inventory

Review of the National Wetlands Inventory (NWI) maps for Clark County (USDOI 2007) identified no potential wetland features within the Project area.

2.4. Climate

Clark County depicts a subtropical arid climate. The summers are long and hot and the winters short and mild (NOAA 2005). Summer temperatures above 100° F occur rather frequently in the south and occasionally over the rest of the State (NOAA 2005). During the summer months of June through September, average daytime highs range from 94 – 104 °F (34 to 40°C) with nighttime lows ranging from 69 – 78°F (21–26°C). There are an average of 133 days per year that exceed 90°F (32°C) and 72 days that exceed 100 °F (38°C). The extreme temperatures are most often during July and August. Humidity is often under 10 percent.

The winter season is generally mild and of shorter duration. Average daytime highs are 60 °F (16°C) with nighttime lows around 40 °F (4°C). Although temperatures can sometimes drop to freezing, 32 °F (0°C), rarely do the nighttime temperatures dip below 30 °F. Snowfall occurs in the surrounding mountains, but is rare in the valley.

Widespread episodes of blowing dust and sand are common during the winter and spring seasons. Strong winds are the most hazardous weather experience in the area. Although uncommon, winds of over 50mph can occur during vigorous storms.

On average, sunny days are recorded 85 percent of the time (Gorelow 2005). There are approximately 300 sunny days per year with roughly 4.2 inches of rainfall.

2.5. Vegetation

There are approximately 200 endemic plant species found in the Mojave Desert. The most commonly found species is the creosote bush (*Larrea tridentate*). Approximately 70% of the Mojave Desert is covered by creosotebush-white bursage (*Ambrosia dumosa*) associations. Species associated with creosotebush-white bursage communities in the Mojave Desert include Shockley's goldenhead (*Acamptopappus shockleyi*), Anderson's wolfberry (*Lycium andersonii*), range ratany (*Krameria parvifolia*), Mojave yucca (*Yucca schidigera*), California jointfir (*Ephedra funerea*), spiny hopsage (*Grayia spinosa*), and winterfat (*Krascheninnikovia lanata*) (Feller 2010). Creosotebush also occurs in the Mojave Desert scrub association with shadscale (*A. confertifolia*), white burrobrush (*Hymenoclea salsola*), blackbrush (*Coleogyne ramosissima*), desertsenna (*Cassia armata*), Catclaw (*Acacia greggi*) and Nevada ephedra (*Ephedra nevadensis*) (Feller, 2010).

Common cacti found are the barrel cactus (*Ferocactus acanthodes*), beavertail cactus (*Opuntia basilaris*), cottontop cactus (*Echinocactus polycephalus*), hedgehog cactus (*Echinocereus engelmanii var. chrysocentrus.*), pencil cholla (*Opuntia ramosissima*), silver cholla (*Opuntia echinocarpa*) and teddybear cholla (*Opuntia bigelovii*).

Grasses regularly found are big galleta (*Hilaria rigida*), Indiana rice grass (*Oryzopsis hymenoides*), bush muhly (*Muhlenbergia porteri*), fluff grass (*Erioneuron pulchella*), red brome (*Bromus rubens*), Desert needle (*Stipa speciosa*), Arabian grass (*Schismus arabicus*), snakeweed (*Gutierrezia*), Desert trumpet (*Eriogonum inflatum*), four winged saltbush (*Atriplex canescens*), and Desert grass (*Blepharidachne kingii).*

2.6. Clark County Soil Survey

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey maps (USDA NRCS 2007) used to determine the soil information for the property and surrounding area are provided as Figure 3 (Appendix A). Mapped soil types for the project area were compared to the Hydric Soils List (USDA NRCS 2007). Tonopah Gravel, Bard Gravel, Badland, and Mormon Mesa are the soil types on the project area. The following is a description of these soil types:

The **Tonopah series** consists of very deep, excessively to well drained soils that formed in mixed alluvium. Tonopah soils are on fan remnants and fan piedmonts. Slope ranges

from 0 to 15 percent. The mean annual precipitation is about 6 inches and the mean annual temperature is about 65 °F. The present vegetation is mainly creosotebush and white bursage.

The **Bard series** consists of shallow over cemented material, well drained soils that formed in alluvium derived predominantly from limestone and dolomite with some sandstone and quartzite. The Bard soils are on dissected valley fill terraces, alluvial fans and fan remnants. Slope ranges from 0 to 15 percent. The mean annual precipitation is about 5 inches and the mean annual air temperature is about 62 degrees F. The vegetation is mainly creosotebush, white bursage, annual buckwheat, cholla and other cacti.

The **Badland unit** consists of severely eroded and gullied sideslopes of the mesa. It is made of exposures of the Muddy Creek Formation. The Formation consists of highly stratified sand, silt, and clay that contain a large amount of gypsum and calcium carbonate. Slopes are commonly 15 to 50 percent, but can be as much as 100 percent in some areas. Run-off is very rapid, and the hazard of erosion is very high. This unit is described as generally eroded and barren of vegetation.

The **Mormon Mesa** series consist of shallow over petrocalcic, well drained soils that formed in material influenced by calcareous loess over mixed alluvium from predominantly limestone sources. The Mormon Mesa soils are on summits of fan remnants and mesas. Slope ranges from 0 to 15 percent. The mean annual precipitation is about 5 inches and the mean annual temperature is about 65 °F. The vegetation is scattered white bursage, yucca, and creosotebush with some big galleta and Indian ricegrass.

2.7. Site photographs

Site photographs and GPS points were taken along each of the swale crossings and culverts under the railroad. A map showing the GPS points at photo locations is presented as Figure 4 in Appendix A. Each photograph is labeled with the direction it was taken and a description (See Appendix B).

2.8. Pertinent Supreme Court Decisions

Three Supreme Court cases have shaped the current understanding of federal jurisdiction over wetlands and waters of the U.S. In 1985, the court decision in *United States v. Riverside Bayview Homes, Inc.* (474 U.S. 121) upheld USACE jurisdiction and Section 404's applicability to interstate waters, "navigable waters," and waters and wetlands adjacent to or connected to navigable waters (Pooley 2002). In the *Riverside Bayview* case, the Court found that "Congress' concern" for the protection of water quality and

aquatic ecosystems indicated its intent to regulate wetlands "inseparably bound up with" jurisdictional waters (474 U.S. at 134; ACOE 2003).

On January 9, 2001, the Supreme Court of the United States issued a decision on *Solid Waste Agency of Northern Cook County* (SWANCC) *v. United States Army Corps of Engineers, et al.* with respect to whether the use of an isolated, intrastate pond by migratory birds is sufficient interstate commerce to warrant USACE jurisdiction over that pond pursuant to Section 404 of the Clean Water Act (CWA). As federal regulatory authority only extends to activities that affect interstate commerce pursuant to Article 1, Section 8 of the U.S. Constitution, USACE restricted its jurisdiction on isolated (intrastate) waters, such as ponds or vernal pools lacking connection to waters of the U.S. prior to 1985.

On September 12, 1985, the Environmental Protection Agency (EPA) issued a memorandum asserting USACE jurisdiction over isolated waters that are used or could be used by migratory birds or endangered species (USACE 1998). This assertion became known as the "Migratory Bird Rule." Consequently, the definition of "waters of the United States" in USACE regulations was modified to include isolated waters, such as vernal pools or mining ponds, which qualified under the Migratory Bird Rule.

In SWANCC, the Supreme Court essentially stated that the Migratory Bird Rule does not sufficiently qualify an isolated pond for USACE jurisdiction. The SWANCC ruling, however, did not refute the 1985 decision made by the Court in *Riverside Bayview*. The SWANCC ruling denied USACE jurisdiction over "non-navigable, isolated, intrastate" waters based only on use by migratory birds, but did not strike down any regulation or definition of "water of the United States" or adjacency.

The *Rapanos v. United States* and *Carabell v. United States* cases (referred to collectively as the Rapanos case) heard by the Supreme Court in 2006 questioned whether the CWA covers wetlands that do not contain, and are not adjacent to, traditional navigable waters (Environmental Law Institute [ELI] 2007). The consolidated case included two lower court cases in which the USACE had asserted jurisdiction over two different scenarios. At the first site, the wetlands shared a surface water connection with non-navigable tributaries of navigable waters. At the second site, the wetlands were Jurisdictional Delineation Report for the Calavo Drive Drainage Improvement Project separated by a berm from non-navigable tributaries of navigable waters. The Supreme Court overturned the USACE's assertion of jurisdiction at each of these sites and returned the cases back to the lower courts with a 5-4 decision; however, the 5-4 decision was split 4-1-4. The four dissenting justices, in an opinion authored by Justice Stevens, concluded that EPA's and the Corps' interpretation of "waters of the United States" was a reasonable interpretation of the Clean Water Act (USACE 2007). The five justices invalidating the lower court's decision did not agree on the reason the wetlands were not jurisdictional. Justice Scalia,

representing the four justices in agreement, and Justice Kennedy, in a solo opinion, wrote separate opinions, thereby, providing two separate tests or approaches from which the lower courts would now need to apply (ELI 2007). Justice Scalia's opinion would limit CWA jurisdiction to wetlands that are both adjacent to and have a continuous surface connection with "relatively permanent" bodies of water "connected to" traditional interstate navigable waters. Justice Kennedy wrote in his opinion that he concurred with the judgment to return the cases to the lower courts and defined CWA jurisdiction over wetlands adjacent to non-navigable tributaries where the wetlands have a "significant nexus" with navigable waters (ELI 2007).

Due to the split decision on the Rapanos case, there is some uncertainty as to how the lower courts will apply the decision. Justice Kennedy's opinion that a "significant nexus" is required seems to have become the criteria from which to determine CWA jurisdiction for many courts, including the Ninth Circuit Court.

On June 5, 2007, the EPA and the USACE issued guidance on how agency representatives will deal with CWA jurisdiction in light of the Rapanos decision. The effect of the joint guidance is that each jurisdictional delineation will include a determination of significant nexus and that each jurisdictional determination made by the USACE will be coordinated with the EPA. The public review period for the guidance expired on January 21, 2008. On January 28, 2008, the USACE published a memorandum outlining the coordination procedures for all jurisdictional determinations involving a significant nexus determination.

3. Determination Results

This chapter is a presentation of aquatic resources and their jurisdictional status based on U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook (USACE, 2007). There are no Traditional Navigable Waters (TNW) within the Project area. Six drainages were mapped within the Project area (Figure 5); however, none were considered potentially jurisdictional. Table 3-1 provides a summary of the identified resources, the presence of wetlands, feature length, feature area, OHWM average width and proximity to Relatively Permanent Waters (RPW).

3.1. Traditional Navigable Waters

TNWs are all tidal waters and waters that have been, could be, or are used in interstate or foreign commerce. TNWs are jurisdictional and any tributary that continually flows directly or indirectly at least seasonally into a TNW is also jurisdictional. There are no TNWs within the Project area.

3.2. Relatively Permanent Waters

RPWs are tributaries that flow year round or have continuous flow at least seasonally, and that flow directly or indirectly into a TNW. A wetland that abuts a tributary has no distinction between the immediate edge of the tributary and the wetland itself. An adjacent tributary has a barrier between itself and the tributary, but is connected by surface flow. A wetland adjacent to a RPW or Non-RPW must have a significant nexus. A significant nexus is a more than speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW (USACE 2007). There are no RPWs within the Project area.

3.3. Non-relatively Permanent Waters

Non-RPWs are tributaries that do not have continuous flow at least seasonally. Non-RPWs are jurisdictional where there is a significant nexus to a TNW. The six drainages discussed below drain into a Non-RPW approximately 1-mile east of the site.

3.4. Drainages

Drainages are swales, erosional features, or small washes that are characterized by low flow volume, infrequent and short duration flow; ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water; uplands transporting overland flow generated from precipitation (USACE 2007). Drainages are not jurisdictional. There are six drainages

within the Project area that need discussion. The Arid West Ephemeral and Intermittent Streams OHWM Datasheet for each feature is included in Appendix C and the Jurisdictional Determination Forms are included in Appendix D.

Drainage 1 (D-1): D-1 is an erosional feature. D-1 has a very low slope and only flows during and immediately after a rainfall event. No OHWM was observed for this feature and the vegetation within the feature is consistent with the surrounding area. Water from this feature flows through a culvert (culvert 1) under the elevated railroad tracks. D-1 has a subwatershed size of 146 acres (See Figure 6 Appendix A).

Drainage 2 (D-2): D-2 is an erosional feature. D-2 has a very low slope and only flows during and immediately after a rainfall event. No OHWM was observed for this feature and the vegetation within the feature is consistent with the surrounding area. Water from this feature flows through a culvert (culvert 2) under the elevated railroad tracks. D-2 has a subwatershed size of 200 acres (See Figure 6 Appendix A).

Drainage 3 (D-3): D-3 is an erosional feature. D-3 has a very low slope and only flows during and immediately after a rainfall event. No OHWM was observed for this feature and the vegetation within the feature is consistent with the surrounding area. Water from this feature flows through a culvert (culvert 3) under the elevated railroad tracks. D-3 has a subwatershed size of 465 acres (See Figure 6 Appendix A).

Drainage 4 (D-4): D-4 is a vegetated drainage way consisting of braided channels that start and stop abruptly and only flows during and immediately after a rainfall event. The identified OHWM was considered discontinuous. These channels are not connected, have vegetation in the bottom of the channel, and there are considerable distances without any channels at all. Water from this feature flows through a culvert (culvert 4) under the elevated railroad tracks. D-4 has a subwatershed size of 481 acres (See Figure 6 Appendix A).

Drainage 5 (D-5): D-5 is an erosional feature. D-5 has a very low slope and only flows during and immediately after a rainfall event. No OHWM was observed for this feature and the vegetation within the feature is consistent with the surrounding area. Water from this feature flows through a culvert (culvert 5) under the elevated railroad tracks. D-5 has a subwatershed size of 140 acres (See Figure 6 Appendix A).

Drainage 6 (D-6): D-6 is an erosional feature. D-6 has a very low slope and only flows during and immediately after a rainfall event. The identified OHWM was considered discontinuous and the channel was vegetated. Water from this feature flows into an off-site impoundment created by the elevated railroad track. This water would be considered isolated. D-6 has a subwatershed size of 322 acres (See Figure 6 Appendix A).

Table 3-1:
Preliminary Jurisdictional Waters

Feature ID	Resource Type	Classification	Abutting Wetlands	Adjacent Wetlands	Total Feature (linear feet) on site	Total Area (acres)	OHWM Width (feet)	Feature Abuts RPW	Adjacent RPW
D-1	Desert Swale	Non-jurisdictional	None	None	2,445	0.14	2-3	None	None
D-2	Desert Swale	Non-jurisdictional	None	None	10,190	0.58	2-3	None	None
D-3	Desert Swale	Non-jurisdictional	None	None	3,018	0.17	2-3	None	None
D-4	Desert Swale	Non-jurisdictional	None	None	9,941	0.91	4	None	None
D-5	Desert Swale	Non-jurisdictional	None	None	2,788	0.16	2-3	None	None
D-6	Isolated Swale	Non-jurisdictional	None	None	6,356	0.36	2	None	None
				Total	**34,378**	**2.34**			

Contour data for the site was collected and processed. Utilizing GIS, the watersheds for each drainage were mapped and the areas calculated (See Figure 6). Table 3-2 shows the acres of each watershed associated with the drainages.

Table 3-2:
Watershed Acres Associated with Each Drainage

Drainage	Watershed Acres
Drainage 1	146.0
Drainage 2	200.7
Drainage 3	465.6
Drainage 4	481.8
Drainage 5	140.1
Drainage 6	322.4

It should be noted that the site exists on a mesa top with the general flow from the west side to the east side. No drainage has a watershed larger than one square mile. In addition, due to the topography, water on a small portion of the west side flows west off the site and water on the northern side flows north off-site (See figure 6).

4. Summary

All aquatic resources on the project site were documented and mapped. This preliminary jurisdictional determination report represents Malcolm Pirnie's best professional judgment based on field work conducted in December 2010. A total of six desert drainage swales and no wetlands were identified, on-site, during the assessment. One foot contour data was collected for the site. The contour data was used to calculate the watershed for each of the 6 drainages. All of the drainage subwatersheds were calculated to be smaller than one square mile (640 acres). As discussed in greater detail within the Jurisdictional Determination Form (Appendix D), the OHWM were considered discontinuous and water flows in these feature only during and after a significant rainfall event. These drainages meet the definition of Desert Swale, included in the USACE Jurisdictional Determination Form Instructional Guidebook. All the aquatic features on-site flow through five culverts under the railroad track on the east side.

This page intended to be blank.

5. References

Benson, L.; Darrow, R.A. 1981. Trees and Shrubs of the Southwest Deserts. Tucson, AZ: University of Arizona Press. 68p.

Environmental Law Institute (ELI) 2007 Clean Water Act Jurisdictional Handbook. Washington D.C. Available for download at http://www.elistore.org.

Feller, Walter. No date. Mojave Desert Plants. Accessed December 22, 2010. http://mojavedesert.net/plants/

Gorelow, Andrew S. 2005 Climate of Las Vegas, Nevada. http://www.wrh.noaa.gov/vef/climate/Las%20Vegas%20Climate%20Book.pdf. Accessed December 22, 2010.

Longwell, C.R., Pampeyan, E.H., Bowyer, B., and Roberts, R.J., 1965, Geology and Mineral Deposits of Clark County, Nevada. Nevada Bureau of Mines and Geology, Bulletin 62, 218 p., with 1:250,000 scale geologic map.

National Oceanic and Atmospheric Administration. 2005. Climate of Nevada. http://cdo.ncdc.noaa.gov/climatenormals/clim60/states/Clim_NV_01.pdf. Accessed December 22, 2010.

Pooley, D.S. 2002. *The Future of Wetlands Regulation in the Wake of the SWANCC Decision*. The Environmental Monitor, Association of Environmental Professionals. Sacramento, CA.

U.S. Army Corps of Engineers. 1987 Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, Department of the Army. January.

U.S. Army Corps of Engineers. 2003 Federal Register Vol 68 No. 10. Joint Memorandum of Regarding the Clean Water Act Definition of Waters of the U.S. in Light of SWANCC.

U.S. Army Corps of Engineers. 2006 Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. Prepared by U.S. Army Engineer Research and Development Center. December.

U.S. Army Corps of Engineers. 2007 Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision In Rapanos v. United States & Carabell v. United States. Memorandum dated June 5.

U.S. Army Corps of Engineers. 2008 A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States Prepared by U.S. Army Engineer Research and Development Center.

U.S. Department of Agriculture, Natural Resources Conservation Service. 2007. National Cooperative Soil Survey, Web Soil Survey, Accessed December 21st at: http://websoilsurvey.nrcs.usda.gov/app/.

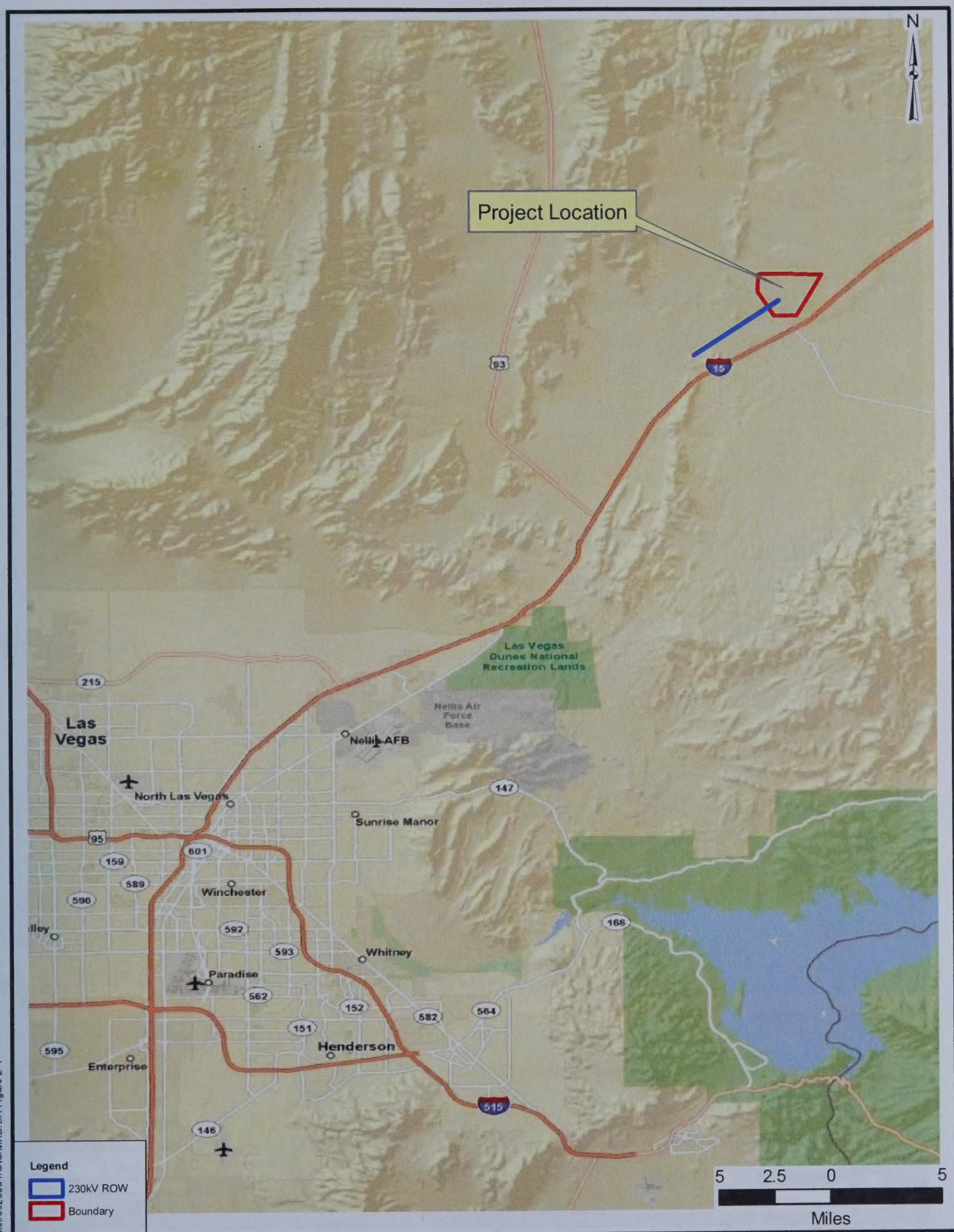
U.S. Department of the Interior. 2007. Clark County, Nevada. National Wetlands Inventory Map. Accessed December 21st at: http://wetlandsfws.er.usgs.gov/wtlnds/viewer.htm.

K Road Solar Power
Preliminary Jurisdictional Determination Report

Appendix A: Figures

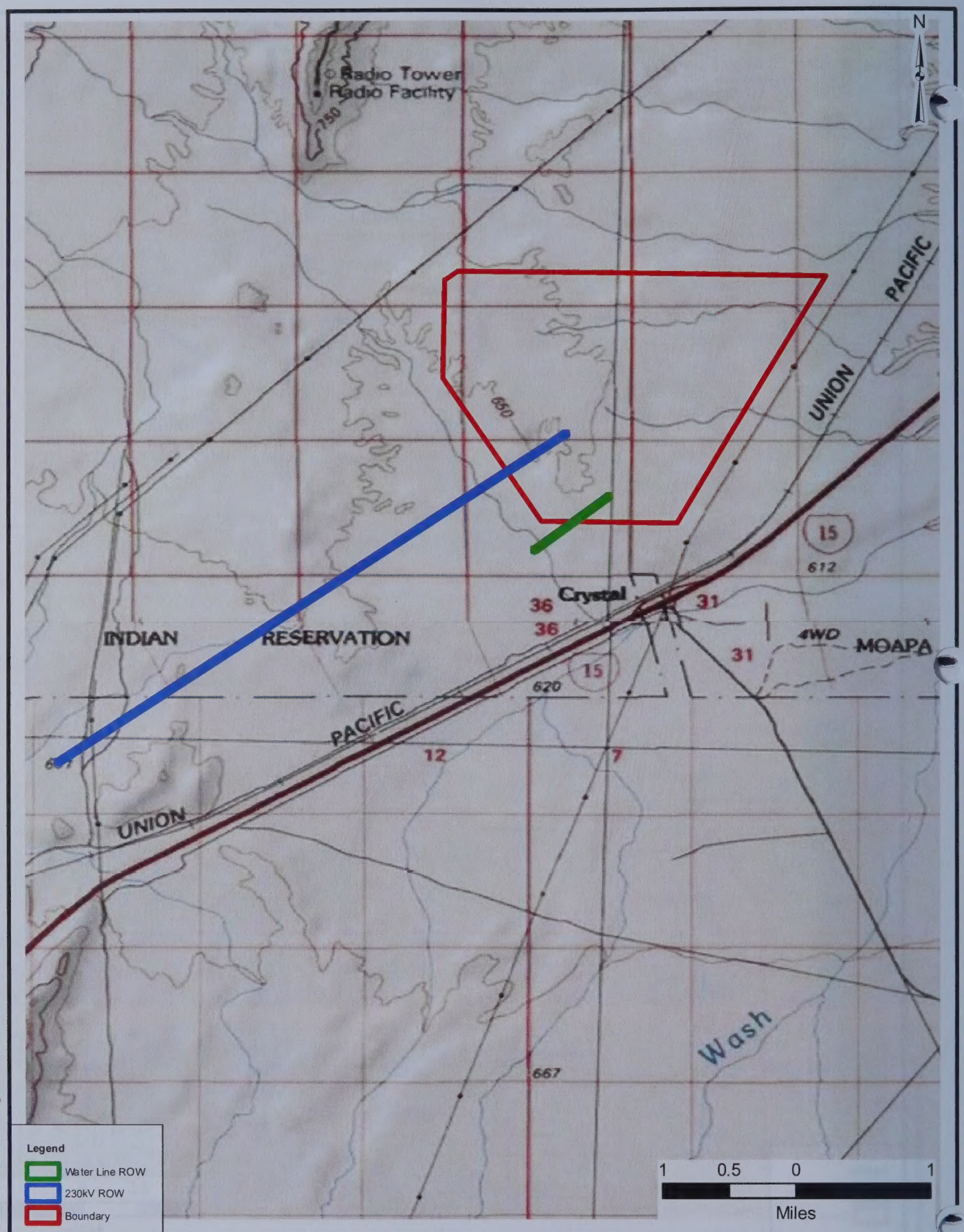
MALCOLM PIRNIE

This page intended to be blank.



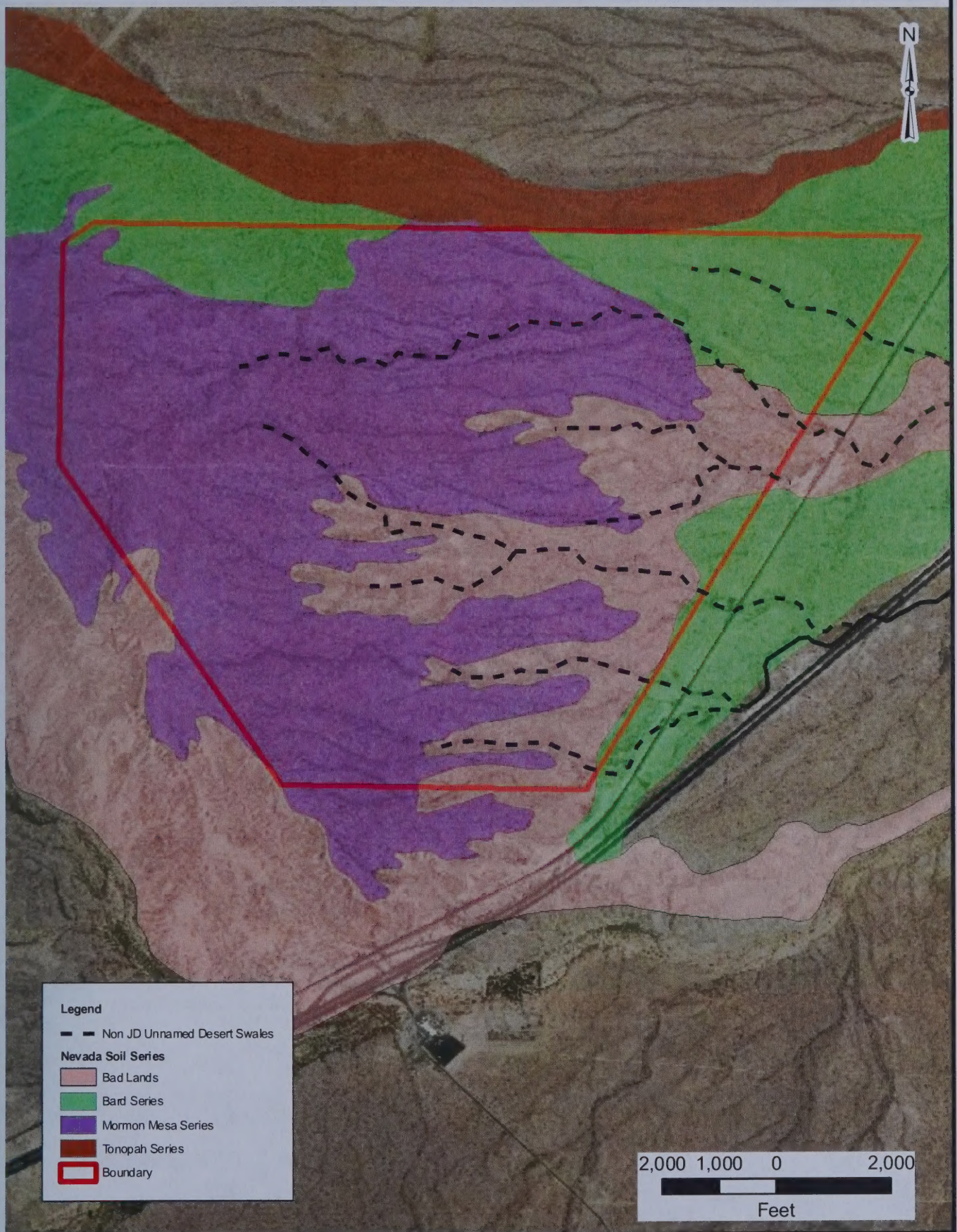
MALCOLM PIRNIE	KRoad Power San Diego, California KRoad Moapa Solar Project	Moapa Reservation Jurisdictional Determination Site Vicinity Map	MALCOLM PIRNIE, INC. 2011 FIGURE 1

Map Document:Austin/6923001/GIS/MXD/BA Figure 2-1



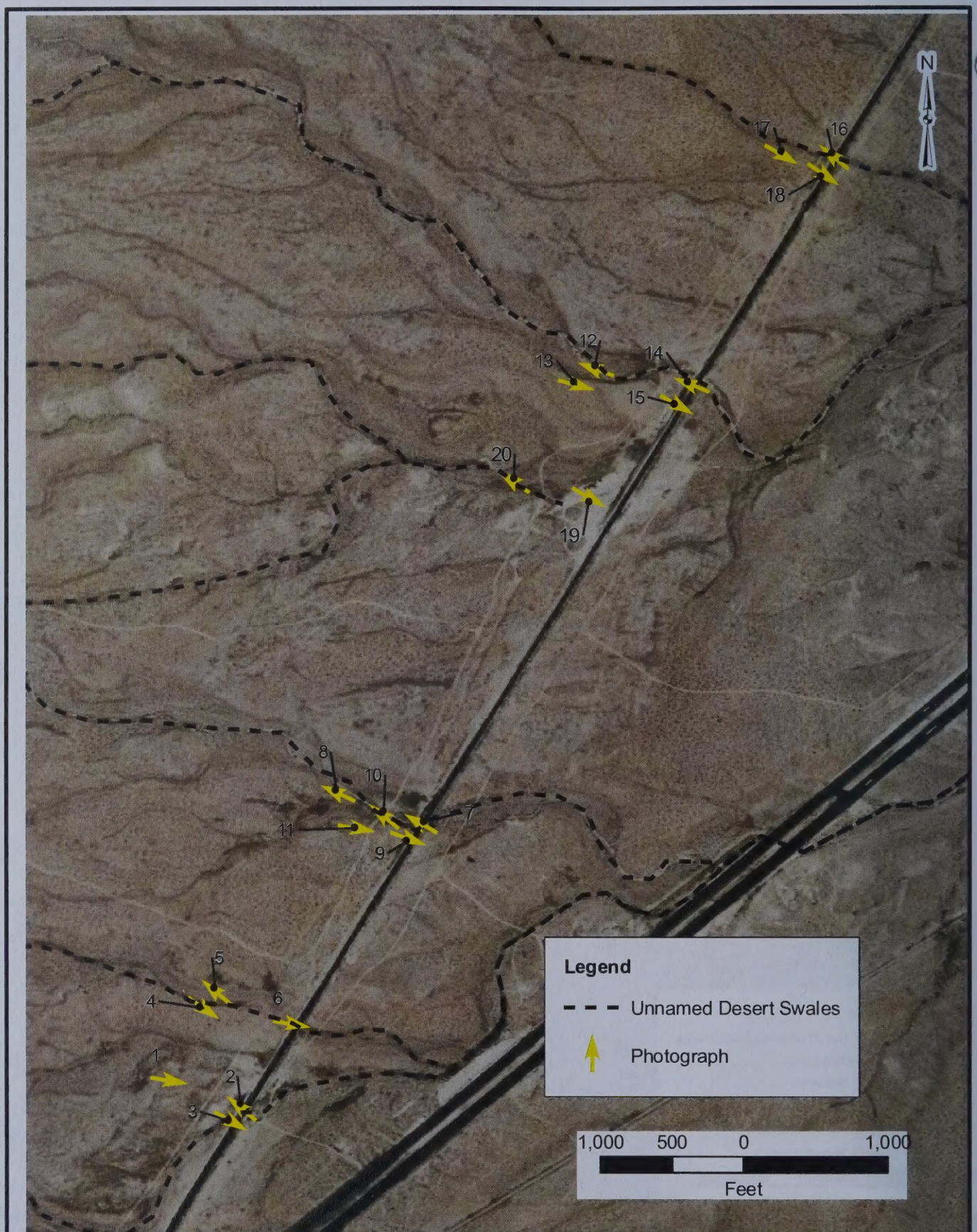
Map Document:Austin/6923001/GIS/MXD/BA Figure 2-2

MALCOLM PIRNIE	KRoad Power San Diego, California KRoad Moapa Solar Project	Moapa Reservation Jurisdictional Determination USGS Topography Map	MALCOLM PIRNIE, INC. 2011 FIGURE 2



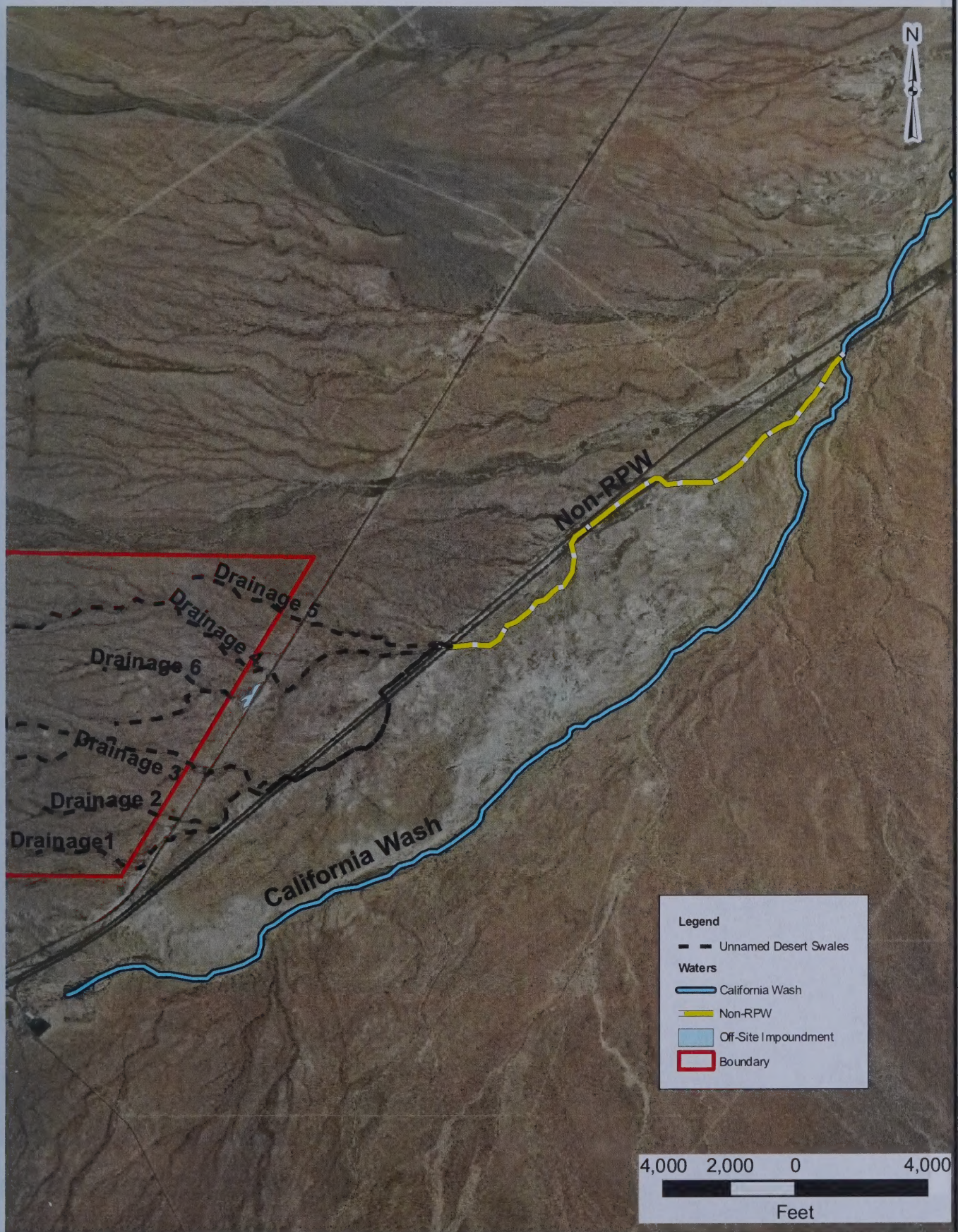
MALCOLM PIRNIE	KRoad Power San Diego, California KRoad Moapa Solar Project	Moapa Reservation Jurisdictional Determination Clark County Soil Survey	MALCOLM PIRNIE, INC. 2011 FIGURE 3

Map Document: (S:\Resources\Standards_Guidelines\MapTemplates\GIS_TEMPLATES_2005\11X8.5_Portrait.mxt)
7/19/2005 – 5:12:41 PM



MALCOLM PIRNIE	KRoad Power San Diego, California KRoad Moapa Solar Project	Moapa Reservation Jurisdictional Determination Photographic Location Map	MALCOLM PIRNIE, INC. 2011 FIGURE 4

Map Document: (S:\GIS_Resources\Standards_Guidelines\MapTemplates\GIS_TEMPLATES_2005\11X8.5_Portrait.mxt)
7/19/2005 – 5:12:41 PM



MALCOLM PIRNIE

KRoad Power
San Diego, California

KRoad Moapa Solar Project

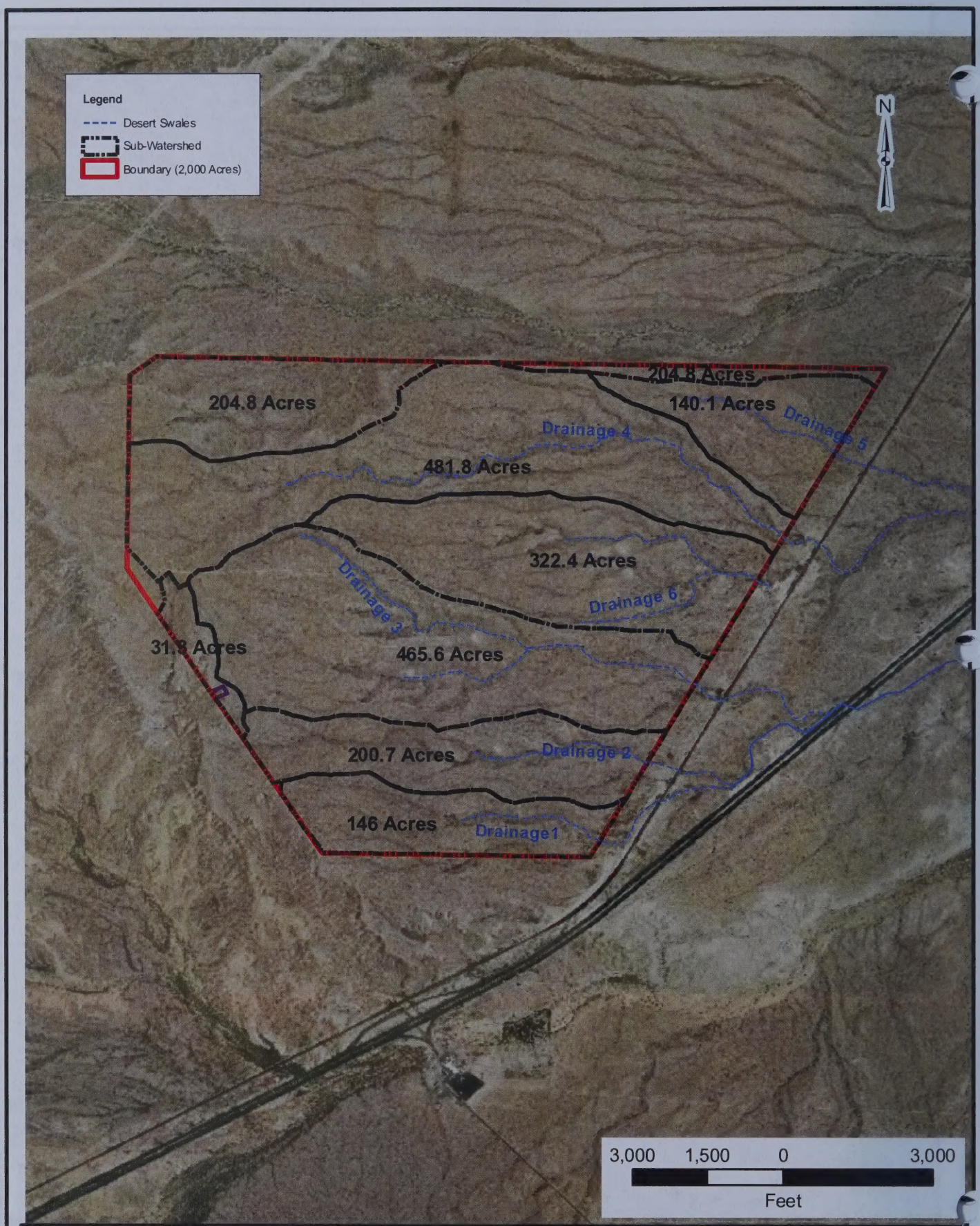
Moapa Reservation

Jurisdictional Waters Map

MALCOLM PIRNIE, INC.

2011
FIGURE 5

Map Document: (S...Resources\Standards_Guidelines\MapTemplates\GIS_TEMPLATES_2005\11X8.5_Portrait.mxt)
7/19/2005 – 5:12:41 PM



MALCOLM PIRNIE

KRoad Power
San Diego, California

KRoad Moapa Solar Project

Moapa Reservation
Watershed Areas Associated with Drainages

MALCOLM PIRNIE, INC.

2011

FIGURE 6

K Road Solar Power
Preliminary Jurisdictional Determination Report

Appendix B: Site Photographs

MALCOLM PIRNIE

This page intended to be blank.

MALCOLM PIRNIE

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
1	12/13/10

Direction Photo Taken:
East

Description:

Drainage 1.
Looking from the site boundary to the culvert under the Railroad.
Note: the lack of bed and bank or OHWM.

MALCOLM PIRNIE

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
2	12/13/10

Direction Photo Taken:
West

Description:

Drainage 2.

Looking from the Railroad west across the sites. Note the lack of bed and bank or OHWM.

MALCOLM PIRNIE
INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No. 3 | **Date:** 12/13/10

Direction Photo Taken:
East

Description:

Drainage 1.

Looking from the Railroad east towards interstate 15. Note the lack of bed and bank or OHWM.

MALCOLM PIRNIE
INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No. 4 | **Date:** 12/13/10

Direction Photo Taken:
East

Description:

Drainage 2.
Looking from the site boundary to the culvert under the Railroad.
Note: the lack of bed and bank, OHWM, or vegetation shift.

MALCOLM PIRNIE

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
5	12/13/10

Direction Photo Taken:
East

Description:

Drainage 2.

Looking from the site boundary across the site.

MALCOLM PIRNIE

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
6	12/13/10

Direction Photo Taken:
East

Description:

Drainage 2.

Looking from the railroad east towards interstate 15. Note the lack of bed and bank or OHWM.

MALCOLM PIRNIE
INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
7	12/13/10

Direction Photo Taken:
West

Description:

Drainage 3.
Looking from the Railroad toward project site. Note the lack of bed and bank or OHWM.

MALCOLM PIRNIE
INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
8	12/13/10

Direction Photo Taken:
West

Description:

Drainage 3
Looking from the site boundary across the site. Note the lack of bed and bank or OHWM.

MALCOLM PIRNIE

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
9	12/13/10

Direction Photo Taken:
West

Description:

Drainage 3.

Looking from the railroad east towards interstate 15. Note the lack of continuous bed and bank.

MALCOLM PIRNIE

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
10	12/13/10

Direction Photo Taken:
East

Description:

Drainage 3.

Looking across the site boundary from a point adjacent to the culvert under the Railroad. Note the lack of bed and bank or OHWM.

MALCOLM PIRNIE

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
11	12/13/10

Direction Photo Taken:
West

Description:

Drainage 3.
Looking at the culvert under the Railroad.

MALCOLM PIRNIE

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
12	12/13/10

Direction Photo Taken:
West

Description:

Drainage 4.
Looking from the site boundary towards the center of the site.

MALCOLM PIRNIE

PHOTOGRAPHIC LOG

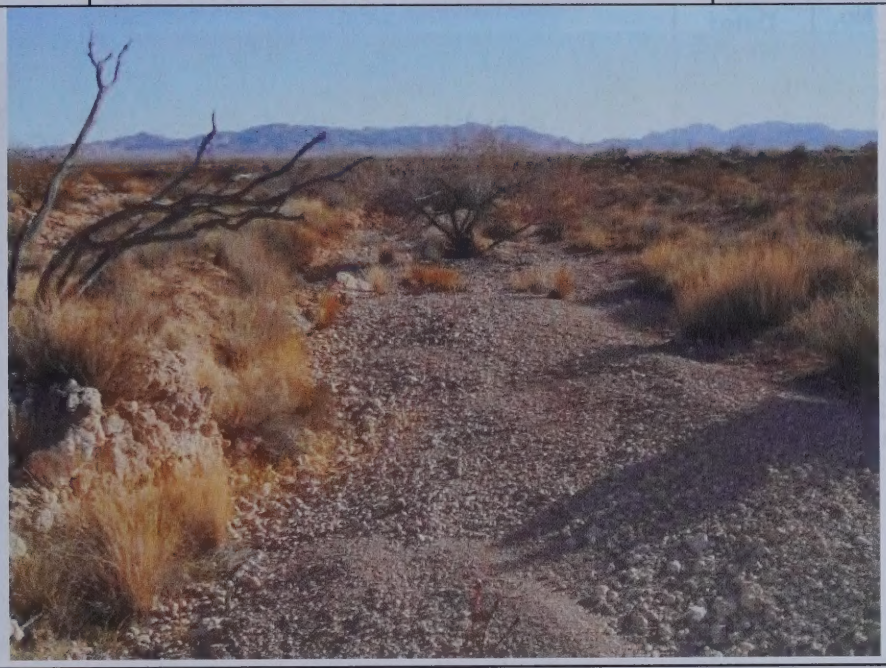
Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
13	12/13/10

Direction Photo Taken:
East

Description:

Drainage 4. Looking from site boundary east towards the culvert under the Railroad. Photo location is in low spot on channel.



MALCOLM PIRNIE

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
14	12/13/10

Direction Photo Taken:
East

Description:

Drainage 4. Looking from the Railroad across the project site.

MALCOLM PIRNIE
INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
15	12/13/10

Direction Photo Taken:
East

Description:

Drainage 4.
Looking from the railroad east towards interstate 15.

MALCOLM PIRNIE
INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
16	12/13/10

Direction Photo Taken:
West

Description:

Drainage 5
Looking from the site boundary Across the site. Note the lack of bed and bank or OHWM.

MALCOLM PIRNIE

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
17	12/13/10

Direction Photo Taken:
East

Description:

Drainage 5.
Looking at the culvert under the Railroad.
Note the lack of bed and bank or OHWM.

MALCOLM PIRNIE

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
18	12/13/10

Direction Photo Taken:
East

Description:

Drainage 5.
Looking from the site boundary to the culvert under the Railroad.
Note the lack of bed and bank or OHWM.

MALCOLM PIRNIE
INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

PHOTOGRAPHIC LOG

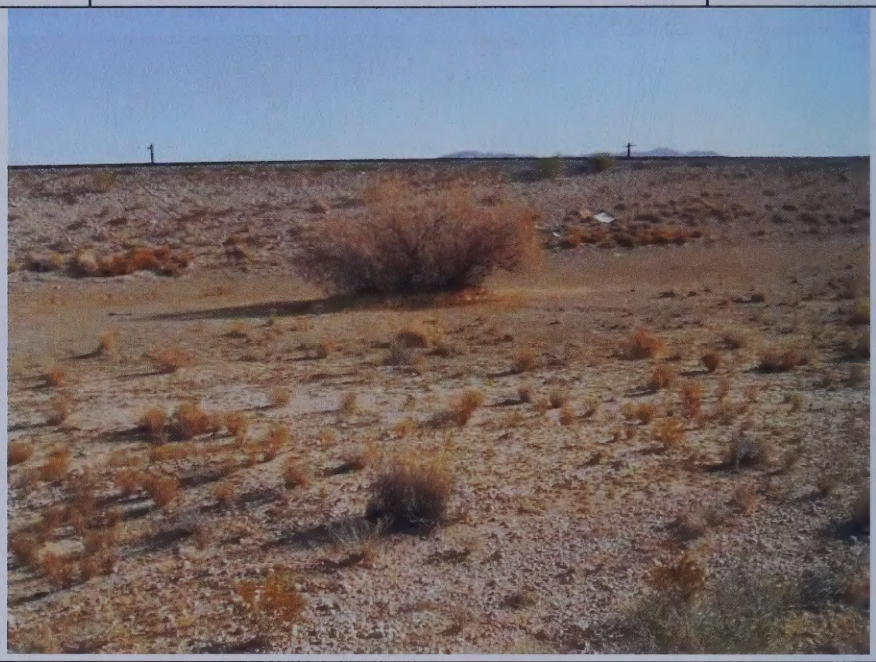
Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
19	12/13/10

Direction Photo Taken:
East

Description:

Drainage 6.
Looking at the built up railroad track from the off-site impoundment. Note the lack of culvert under the railroad.



MALCOLM PIRNIE
INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
KRoad Solar Project	Moapa Reservation Clark County, Nevada	6923001

Photo No.	Date:
20	12/13/10

Direction Photo Taken:
West

Description:

Drainage 6.
Looking up the drainage. Note the lack of bed and bank or OHWM.

K Road Solar Power
Preliminary Jurisdictional Determination Report

Appendix C: OHWM Data Sheets

MALCOLM PIRNIE

This page intended to be blank.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: KRoad Solar Project
Project Number:
Stream: Drainage 1
Investigator(s): A. Mathes and S. Walker

Date: 12/13/10 **Time:**
Town: Moapa **State:** Nevada
Photo begin file#: 1 **Photo end file#:** 3

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [X] / N [ ] Is the site significantly disturbed?

Location Details: Culvert 1 under Railroad

Projection: **Datum:**
Coordinates:

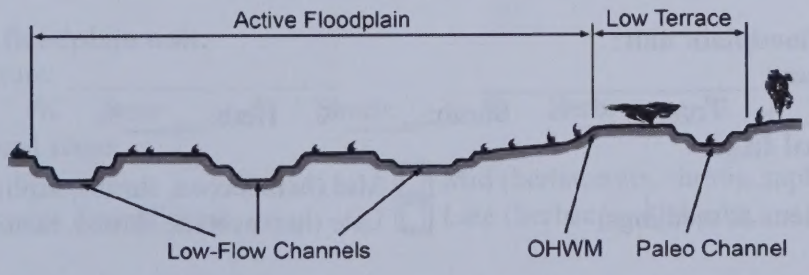
Potential anthropogenic influences on the channel system: The channel flows through a culvert under the railroad track. In addition the railroad was constructed on a large berm that required scraping from the adjacent landscape.

Brief site description: The proposed project is situated in the north end of the Dry Lake Valley. Elevations of the project range from approximately 2,038 feet at the intersection of the main project access road at Interstate Highway 15 to 2,200 feet. Soils are shallow (4 inches) over caliche layer.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2006
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [X] Existing delineation(s) for site
- [X] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

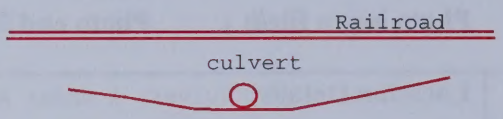


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [ ] GPS
   - [X] Other:

Project ID: **Cross section ID:** **Date:** 12-13-10 **Time:**

Cross section drawing:



OHWM

GPS point: No OHWM was located for this feature.

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

The drainage lacked indications of a high water mark (Changes in sediment, changes in vegetation, or a break in slope). This waterway was determined to be a storm water drainage.

Floodplain unit:

☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No floodplain unit was identified for this drainage.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

This page intended to be blank.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: KRoad Solar Project
Project Number:
Stream: Drainage 2
Investigator(s): A. Mathes and S. Walker

Date: 12/13/10
Town: Moapa
Photo begin file#: 4

Time:
State: Nevada
Photo end file#: 6

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [X] / N [ ] Is the site significantly disturbed?

Location Details: Culvert 2 under Railroad

Projection: **Datum:**
Coordinates:

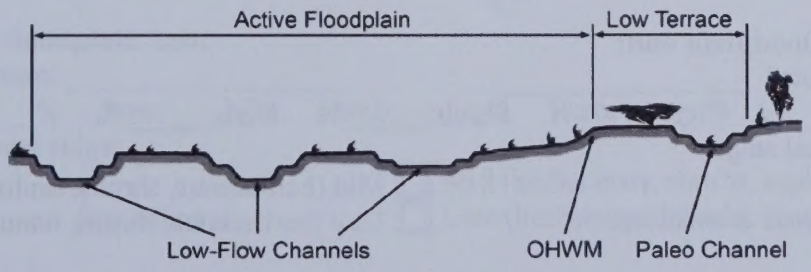
Potential anthropogenic influences on the channel system: The channel flows through a culvert under the railroad track. In addition the railroad was constructed on a large berm that required scraping from the adjacent landscape.

Brief site description: The proposed project is situated in the north end of the Dry Lake Valley. Elevations of the project range from approximately 2,038 feet at the intersection of the main project access road at Interstate Highway 15 to 2,200 feet. Soils are shallow (4 inches) over caliche layer.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2006
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [X] Existing delineation(s) for site
- [X] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

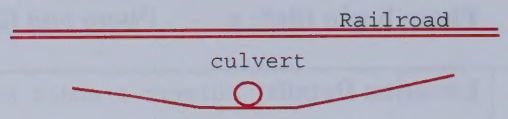


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [ ] GPS
   - [X] Other:

Project ID: **Cross section ID:** **Date:** 12-13-10 **Time:**

Cross section drawing:



OHWM

GPS point: No OHWM was located for this feature.

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

The drainage lacked indications of a high water mark (Changes in sediment, changes in vegetation, or a break in slope). This waterway was determined to be a storm water drainage.

Floodplain unit:

☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No floodplain unit was identified for this drainage.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

This page intended to be blank.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: KRoad Solar Project
Project Number:
Stream: Drainage 3
Investigator(s): A. Mathes and S. Walker

Date: 12/13/10 **Time:**
Town: Moapa **State:** Nevada
Photo begin file#: 7 **Photo end file#:** 10

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [X] / N [ ] Is the site significantly disturbed?

Location Details: Culvert 3 under Railroad

Projection: **Datum:**
Coordinates:

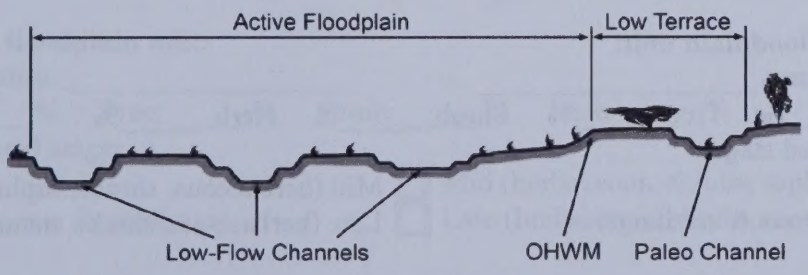
Potential anthropogenic influences on the channel system: The channel flows through a culvert under the railroad track. In addition the railroad was constructed on a large berm that required scraping from the adjacent landscape.

Brief site description: The proposed project is situated in the north end of the Dry Lake Valley. Elevations of the project range from approximately 2,038 feet at the intersection of the main project access road at Interstate Highway 15 to 2,200 feet. Soils are shallow (4 inches) over caliche layer.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2006
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [X] Existing delineation(s) for site
- [X] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

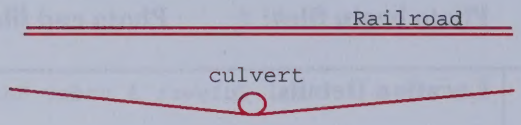


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [ ] GPS
   - [X] Other:

Project ID: **Cross section ID:** **Date:** 12-13-10 **Time:**

Cross section drawing:



There was no change in vegetation or sediment size across the drainage area.

OHWM

GPS point: No OHWM was located for this feature.

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

The drainage lacked indications of a high water mark (Changes in sediment, changes in vegetation, or a break in slope). This waterway was determined to be a storm water drainage.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No floodplain unit was identified for this drainage.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

☐ NA
☐ Early (herbaceous & seedlings)
☐ Mid (herbaceous, shrubs, saplings)
☐ Late (herbaceous, shrubs, mature trees)

Indicators:

☐ Mudcracks
☐ Ripples
☐ Drift and/or debris
☐ Presence of bed and bank
☐ Benches
☐ Soil development
☐ Surface relief
☐ Other: _____
☐ Other: _____
☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

☐ NA
☐ Early (herbaceous & seedlings)
☐ Mid (herbaceous, shrubs, saplings)
☐ Late (herbaceous, shrubs, mature trees)

Indicators:

☐ Mudcracks
☐ Ripples
☐ Drift and/or debris
☐ Presence of bed and bank
☐ Benches
☐ Soil development
☐ Surface relief
☐ Other: _____
☐ Other: _____
☐ Other: _____

Comments:

This page intended to be blank.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: KRoad Solar Project
Project Number:
Stream: Drainage 4
Investigator(s): A. Mathes and S. Walker
Date: 12/13/10 **Time:**
Town: Moapa **State:** Nevada
Photo begin file#: 11 **Photo end file#:** 15

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [X] / N [ ] Is the site significantly disturbed?

Location Details: Culvert 4 under Railroad

Projection: **Datum:**
Coordinates:

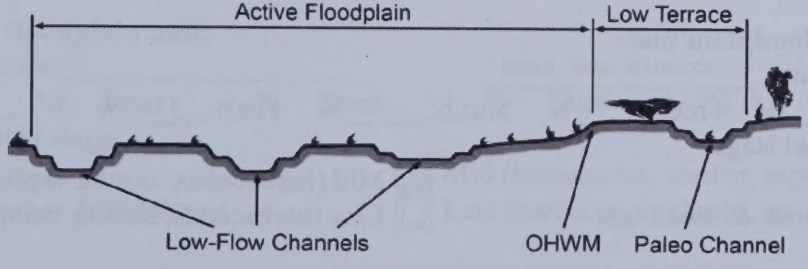
Potential anthropogenic influences on the channel system: The channel flows through a culvert under the railroad track. In addition the railroad was constructed on a large berm that required scraping from the adjacent landscape.

Brief site description: The proposed project is situated in the north end of the Dry Lake Valley. Elevations of the project range from approximately 2,038 feet at the intersection of the main project access road at Interstate Highway 15 to 2,200 feet. Soils are shallow (4 inches) over caliche layer.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2006
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [X] Existing delineation(s) for site
- [X] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

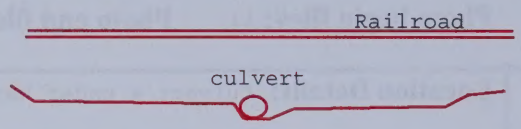


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

Project ID: **Cross section ID:** **Date:** 12-13-10 **Time:**

Cross section drawing:



There was no change in vegetation or sediment size; however, there was a break in slope that indicates a OHWM is present.

OHWM

GPS point: _____

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

The drainage lacked Changes in sediment or changes in vegetation; however, there is a break in slope. While mapping the OHWM it was noted that several expanses lacked a bed and bank and the OHWM was discontinuous.

Floodplain unit:

☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Cobble and sand

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: 40 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

A relic floodplain was evident based on surface topology; however, vegetation and sediment remained consistent throughout the area.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

This page intended to be blank.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: KRoad Solar Project
Project Number:
Stream: Drainage 5
Investigator(s): A. Mathes and S. Walker
Date: 12/13/10 **Time:**
Town: Moapa **State:** Nevada
Photo begin file#: 16 **Photo end file#:** 18

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [X] / N [ ] Is the site significantly disturbed?

Location Details: Culvert 5 under Railroad

Projection: **Datum:**
Coordinates:

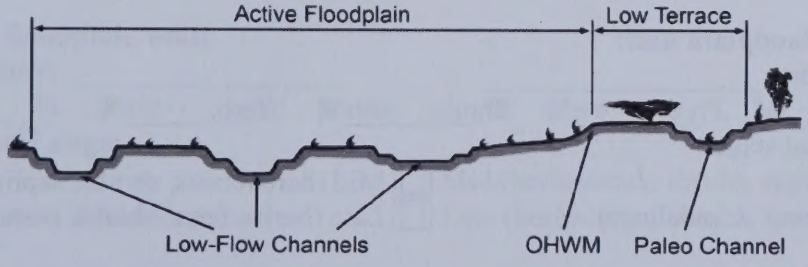
Potential anthropogenic influences on the channel system: The channel flows through a culvert under the railroad track. In addition the railroad was constructed on a large berm that required scraping from the adjacent landscape.

Brief site description: The proposed project is situated in the north end of the Dry Lake Valley. Elevations of the project range from approximately 2,038 feet at the intersection of the main project access road at Interstate Highway 15 to 2,200 feet. Soils are shallow (4 inches) over caliche layer.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2006
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [X] Existing delineation(s) for site
- [X] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

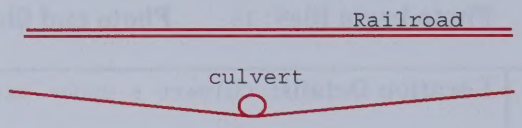


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [ ] GPS
   - [X] Other:

Project ID: **Cross section ID:** **Date:** 12-13-10 **Time:**

Cross section drawing:



There was no change in vegetation or sediment size across the drainage area.

OHWM

GPS point: No OHWM was located for this feature.

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

The drainage lacked indications of a high water mark (Changes in sediment, changes in vegetation, or a break in slope). This waterway was determined to be a storm water drainage.

Floodplain unit:

☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No floodplain unit was identified for this drainage.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

☐ NA
☐ Early (herbaceous & seedlings)
☐ Mid (herbaceous, shrubs, saplings)
☐ Late (herbaceous, shrubs, mature trees)

Indicators:

☐ Mudcracks
☐ Ripples
☐ Drift and/or debris
☐ Presence of bed and bank
☐ Benches
☐ Soil development
☐ Surface relief
☐ Other: _____
☐ Other: _____
☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

☐ NA
☐ Early (herbaceous & seedlings)
☐ Mid (herbaceous, shrubs, saplings)
☐ Late (herbaceous, shrubs, mature trees)

Indicators:

☐ Mudcracks
☐ Ripples
☐ Drift and/or debris
☐ Presence of bed and bank
☐ Benches
☐ Soil development
☐ Surface relief
☐ Other: _____
☐ Other: _____
☐ Other: _____

Comments:

This page intended to be blank.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: KRoad Solar Project
Project Number:
Stream: Drainage 6
Investigator(s): A. Mathes and S. Walker

Date: 12/13/10
Town: Moapa
Photo begin file#: 19

Time:
State: Nevada
Photo end file#: 20

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [X] / N [ ] Is the site significantly disturbed?

Location Details: Isolated Desert Swale Drainage 6

Projection: **Datum:**
Coordinates:

Potential anthropogenic influences on the channel system: The channel flows off-site into an impoundment adjacent to the railroad track. No culvert was constructed in the railroad to allow natural flow.

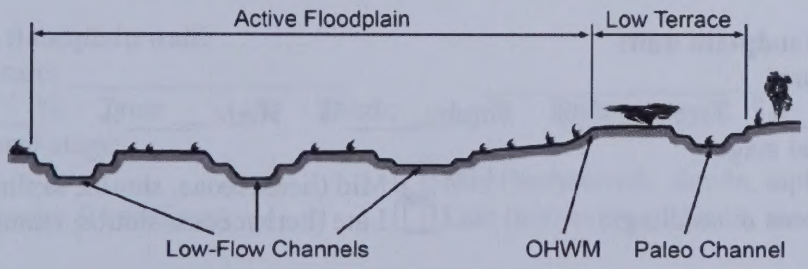
Brief site description: The proposed project is situated in the north end of the Dry Lake Valley. Elevations of the project range from approximately 2,038 feet at the intersection of the main project access road at Interstate Highway 15 to 2,200 feet. Soils are shallow (4 inches) over caliche layer.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2006
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [X] Existing delineation(s) for site
- [X] Global positioning system (GPS)
- [ ] Other studies

- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

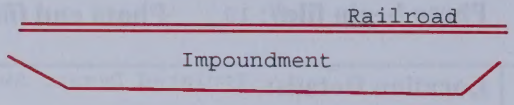


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [ ] GPS
   - [X] Other:

Project ID: **Cross section ID:** **Date:** 12-13-10 **Time:**

Cross section drawing:



The drainage swale emptied into a small impoundment adjacent to the railroad, off-site. This impoundment did not have a significant nexus to any other swales or water bodies.

OHWM

GPS point: _____

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

The drainage lacked a continuous high water mark (Changes in sediment, changes in vegetation, or a break in slope). This waterway was determined to be a storm water drainage. This water way flows into am impoundment off-site.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No floodplain unit was identified for this drainage.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

This page intended to be blank.

K Road Solar Power
Preliminary Jurisdictional Determination Report

Appendix D: Jurisdictional Determination Form

MALCOLM PIRNIE

This page intended to be blank.

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State:Nevada County/parish/borough: Clark County City:
Center coordinates of site (lat/long in degree decimal format): Lat. 36.526881° **N**, Long. -114.7588889° **W**.
Universal Transverse Mercator:
Name of nearest waterbody: California Wash
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: California Wash
Name of watershed or Hydrologic Unit Code (HUC): 15010012
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): 12-13-10

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: **During the field survey six drainages were mapped within the project; however, none were considered jurisdictional. It was noted that drainage 1,2,3 and 5 did not have OWWM and the OHWM on drainages 4 and 6 were discontinuous between the site boundary and the Railroad track boundary. In addition, there was no obvious change in vegetation or sediment across the drainage areas. The drainages convey water across upland areas during and**

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

immediately following a storm event and do not flow for any length of time. The swale areas meet the definition and description of non jurisdictional desert swales as described in the USACE Jurisdictional Determination Form Instructional Guidebook. Drainages 1, 2, and 3 flow off-site into a non-RPW that flows Under Interstate 15; drainage 4 and 5 flow off-site into a different non-RPW that joins the flow of drainges 1, 2, and 3 at Interstate 15. The water flows through a culvert under Interstate 15 and into a road side ditch, before flowing into California Wash.

One foot contour data for the project area was developed. Utilizing the contour data, in GIS, the sub-watershed areas were calculated for each drainage: Drainage 1=146.0; Drainage 2=200.7, Drainage 3=465.6; Drainage 4=481.8; Drainage 5=140.1; and Drainage 6=322.4 acres. Due to the small catchment area, modified channels (flowing under the Railroad track and Interstate 15, and discontinuous channelization that water within these drainages will not reach a TNW (except in extreme rainfall events).

Due to the dry nature of these drainages that only have water immediately after a rainfall event, use by migratory birds in considered nminimal and the drainages will not support any aquatic wildlife.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW: **No TNW on site or adjacent to site.**

   Summarize rationale supporting determination:

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent": No wetlands on site.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

   (i) General Area Conditions:
   Watershed size: **Pick List**
   Drainage area: **Pick List**
   Average annual rainfall: 4.2 inches
   Average annual snowfall: 0 inches

   (ii) Physical Characteristics:
   (a) Relationship with TNW:
   ☐ Tributary flows directly into TNW.
   ☐ Tributary flows through **2** tributaries before entering TNW.

   Project waters are **5-10** river miles from TNW.
   Project waters are **2-5** river miles from RPW.
   Project waters are **5-10** aerial (straight) miles from TNW.
   Project waters are **2-5** aerial (straight) miles from RPW.
   Project waters cross or serve as state boundaries. Explain:

   Identify flow route to TNW[5]: Water flows through swale, under railroad, through swale east under Intersate 15, and into non-RPW and west under Intersate 15 to California Wash.

---

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

Tributary stream order, if known: .

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):
☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):
☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

---

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is: **Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
   ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional waters within the review area (check all that apply):
   - ☐ Tributary waters: linear feet width (ft).
   - ☐ Other non-wetland waters: acres.
     Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
   ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
   ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
   As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
   - ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
   - ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
   - ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
- ☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
- ☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- ☐ which are or could be used for industrial purposes by industries in interstate commerce.
- ☐ Interstate isolated waters. Explain: .
- ☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

---

[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  - Identify type(s) of waters: .
- ☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
- ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☒ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☒ Other: (explain, if not covered above): **Waters do not have a continous OHWM.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
- ☒ Non-wetland waters (i.e., rivers, streams): **34,378** linear feet, **2-4** width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps: .
- ☐ Corps navigable waters' study: .
- ☐ U.S. Geological Survey Hydrologic Atlas: .
  - ☐ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☐ U.S. Geological Survey map(s). Cite scale & quad name: .
- ☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
- ☐ National wetlands inventory map(s). Cite name: .
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps: .
- ☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date): .
  - or ☐ Other (Name & Date): .
- ☐ Previous determination(s). File no. and date of response letter: .
- ☐ Applicable/supporting case law: .
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .

Appendix L

Scoping and Public Meeting Report

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

This page intended to be blank.

K ROAD AND MOAPA BAND OF PAIUTE INDIANS PHOTOVOLTAIC SOLAR FACILITY

ENVIRONMENTAL IMPACT STATEMENT

PUBLIC SCOPING REPORT

March 11, 2011

PREPARED FOR:
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 NORTH CENTRAL AVENUE
PHOENIX, AZ 85004
AND
BUREAU OF INDIAN AFFAIRS
SOUTHERN PAIUTE AGENCY
P.O. Box 720
ST. GEORGE, UTAH 84771

Prepared By:
ARCADIS-US
100 Congress Avenue
Suite 1485
Austin, Texas 78701

This page intended to be blank.

Contents

1. Introduction 1-1

1.1. Purpose ... 1-1
1.2. Document Organization ... 1-2

2. Description of Formal Scoping Meetings 2-1

2.1. Meeting Set-Up ... 2-1
2.2. Meeting Advertising ... 2-2
2.3. Methods for Public Comment ... 2-3

3. Scoping Content Analysis 3-1

3.1. Comment Processing ... 3-1
3.2. Comment Analysis ... 3-1
3.3. Comment Disposition ... 3-2
3.3.1. Summary of Scoping Comments from Letters and Forms ... 3-2
3.3.2. Summary of Informal Comments from Notes Taken During the Public Scoping Meetings ... 3-2
3.3.3. Informal Comment Summary ... 3-2
3.3.3.1. Process ... 3-2
3.3.3.2. Purpose and Need ... 3-3
3.3.3.3. Impact Analysis ... 3-3
3.3.3.4. Out of Scope ... 3-3

List of Tables

Table 2-1: Formal Public Scoping Meeting Dates, Times, Locations and Number of Attendees 2-1
Table 2-2: Advertising of Formal Public Meetings ... 2-2
Table 3-1: Comment Type Codes ... 3-1
Table 3-2: Resource Issue Identification ... 3-1
Table 3-3: Comment Disposition ... 3-2

Appendices

A. Scoping Meeting Attendees
B. Scoping Meeting Pamphlet and Comment Card
C. Scoping Meeting Comments Summary Table
D. Scoping Meeting Transcripts
E. Scoping Meeting Displays and Placards
F. Scoping Meeting Advertisements
G. Scoping Meeting Notice Mailer

Acronyms Used in the Report

BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CA	Cooperating Agency
CEQ	Council on Environmental Quality
Corps	Army Corps of Engineers
DEIS	Draft Environmental Impact Statement
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
K Road	K Road Moapa Solar LLC
LEDPA	Least Environmentally Damaging Practicable Alternative
MW	Megawatt
NEPA	National Environmental Policy Act
NOI	Notice of Intent
PV	Photovoltaic
ROD	Record of Decision
Tribe	Moapa Band of Paiute Indians
USFWS	United States Fish and Wildlife Service
WOUS	Waters of the United States

This page intended to be blank.

1. Introduction

The Bureau of Indian Affairs (BIA), in cooperation with the Moapa Band of Paiute Indians (Tribe), the Bureau of Land Management (BLM), the U.S. Environmental Protection Agency (EPA), and the Army Corps of Engineers (Corps), as cooperating agencies, intend to prepare an environmental impact statement (EIS) for the proposed Moapa Band of Paiute Indians Solar Generation Facility on the Moapa River Indian Reservation in Clark County, Nevada. The Proposed Action evaluated in the EIS consists of BIA approval of a solar energy ground lease and associated agreements entered into by the Moapa Band of Paiute Indians with K Road Moapa Solar LLC (K Road), and associated approval of rights-of-way and easements, for K Road to construct and operate an up-to 350 megawatt (MW) solar photovoltaic (PV) electricity generating facility located entirely on Moapa tribal lands. The Moapa Band of Paiute Indians may use this EIS to make decisions under the Tribal Environmental Policy Ordinance. The BLM may use this EIS to support a decision for a proposed approximately 0.5 mile right-of-way across Federal public lands adjoining the Moapa River Indian Reservation. The right-of-way may be used to link the proposed solar generation facility to an existing substation on a transmission line with a rating up to 500 kilovolts. The USFWS may use this EIS to support its decisions under the Endangered Species Act.

The BIA held public scoping meetings on February 23 and 24, 2011 for the EIS at the Moapa River Indian Reservation and at the BLM Las Vegas, Nevada offices, respectively. The purpose of the public scoping meetings was to provide information on the project planning process to members of the tribe and to the general public and to provide an opportunity for attendees to ask questions of the BIA, the cooperating agencies and the environmental specialists involved with the project. The scoping meetings also provided an opportunity for attendees to express their comments and concerns of the Proposed Action.

1.1. Purpose

The scoping report summarizes public comments, provides a preliminary list of issues and/or concerns, and is intended to aid in determining the appropriate scope of environmental analysis from the comments received in response to the scoping meetings. All issues that are substantive and within the scope of the BIA's decisions will be addressed in the EIS.

1.2. Document Organization

This document contains summary descriptions of the following:

- Scoping meetings, including advertising prior to the meetings
- Opportunities for public comment during the scoping period
- Comments received during the scoping period (February 4 to March 7, 2011)

As part of the National Environmental Policy Act (NEPA) process all comments are given equal consideration, regardless of the method of their transmittal.

2. Description of Formal Scoping Meetings

The BIA held two public scoping meetings for the K Road Moapa Band of Paiute Indians Solar Generation Facility that were held near the Proposed Project location as discussed previously. Meeting dates, locations, and numbers of attendees are provided in Table 2-1. Scoping meeting attendees are listed in Appendix A.

Table 2-1:
Formal Public Scoping Meeting Dates, Times, Locations and Number of Attendees

Date	Time	City, State	Address	Number of Attendees
Wednesday, February 23, 2011	6:00 – 8:00 pm	Moapa Town, Nevada	Moapa River Indian Reservation, Tribal Hall 1 Lincoln Street	29
Thursday, February 24, 2011	6:00 – 8:00 pm	Las Vegas, Nevada	BLM, Conference Room North Las Vegas Office, 4701 North Torrey Pines	27

2.1. Meeting Set-Up

The public scoping meetings were a combination of open house and formal presentation. Attendees were greeted at the entrance and asked to sign in (see Appendix A for copies of sign in sheets). Attendees were given a comment card and a pamphlet that contained illustrations and literature about the proposed project (Appendix B). Attendees helped themselves to light refreshments while viewing the posters and placards. Attendees engaged in conversations and were introduced to the agencies representatives prior to the formal presentations.

Following an open house of approximately 30 minutes, attendees were seated and the presentation began. Both scoping meetings followed the same agenda, with the exception of an opening prayer that was conducted at the Moapa River Indian Reservation by Leroy Spotted Eagle. The program opened with Chairman William Anderson of the Moapa Band of Paiute Indians. Chairman Anderson gave a brief history of the Reservation, what he envisions will be the future of his people and the importance of the Proposed Action to the community of Paiute Indians. Chairman Anderson then turned the presentation over to the BIA Regional Environmental Protection Officer, Amy Heuslein, who proceeded to introduce Ms. Kellie Youngbear, the Superintendent of the Southern Paiute Agency. Ms. Youngbear explained the leasing agreement and terms. Following Ms. Youngbear, Ms.

Heuslein resumed her presentation explaining the purpose and need of the EIS, EIS schedule and the NEPA process. ARCADIS-US Project Manager, Chad Martin of the EIS consultant team, presented the Proposed Action with an overview of the technical aspects and the environmental issues already identified to be addressed in the Draft EIS (DEIS). Following the presentation, Mr. Martin concluded the meeting with a public comment session inviting the public to provide verbal comments on the Proposed Action. A court reporter was present at both public scoping meetings to record each meeting verbatim and any public comments expressed. A summary of the comments is provided in Appendix C and the transcripts are provided in Appendix D.

Five informational display boards were arranged in stations (see Appendix E) for each meeting:

1. Agenda placard of the evening events
2. USGS topographical map of Moapa River Indiana Reservation, Proposed Project site boundary, access roads, water line ROW and transmission ROW
3. Aerial map of Moapa River Indiana Reservation, Proposed Project site boundary, drainages, access roads, water line ROW and transmission ROW,
4. Land ownership map of Moapa River Indiana Reservation and Proposed Project site boundary, access roads, BIA lands, BLM lands and private lands.
5. "How Does Solar Power Work" informational poster

2.2. Meeting Advertising

The external scoping criteria were satisfied by advertising the meetings in a variety of formats (Table 2-2; Appendices F and G) at least seven days prior to the scheduled dates and at least 15 days after the Notice of Intent was published in the Federal Register. In each advertisement, the purpose of the scoping meetings was explained as well as the schedule for the comment period, additional ways to comment, dates, time and locations of meetings, and methods of obtaining further information.

Table 2-2:
Advertising of Formal Public Meetings

Newspaper Advertisements
A public notice/news release was published in the Las Vegas Review Journal on February 16; The Las Vegas Sun on February 16; and the Moapa Valley Progress on February 16, 2011.
Scoping Notice Mailer
Public scoping notice mailers were sent on February 15, 2011 to those on the project mailing list (see Appendix G).
Project Website
BIA - Pubic website may be accessed by any one at any time during the scoping period and has a comment section to submit comments. http://projects2.pirnie.com/MoapaSolar/index.cfm?fuseaction=home

2.3. Methods for Public Comment

Members of the public were informed of several methods for providing comments:

- Attendees of the scoping meetings could voice their comments following the presentation at the scoping meeting and have their comments recorded by the court reporter.
- Attendees of the scoping meetings could speak directly to the court reporter at the scoping meetings and have their comments recorded in private.
- Comments could be recorded on comment cards provided at the scoping meetings (see Appendix B) and submitted at the public scoping meetings.
- The comment forms provided at the scoping meetings could be taken home and mailed in at a later date via the U.S. Postal Service to Bureau of Indian Affairs, Southern Paiute Agency, P.O. Box 720, St George, Utah, 84771.
- Individual letters could be hand delivered or mailed via the U.S. Postal Service to Mr. Paul Schlafly, Natural Resource Officer, Bureau of Indian Affairs, Southern Paiute Agency, P.O. Box 720, St George, Utah, 84771; or to Ms. Amy Heuslein, Regional Environmental Protection Officer, BIA Western Regional Office Branch of Environmental Quality Services, 2600 North Central Avenue, 4th Floor Mail Room, Phoenix, AZ 85004-3008.
- Comments could be sent via email to either Mr. Paul Schlafly, Natural Resources Officer of the BIA Southern Paiute Agency at paul.schlafly@bia.gov or Ms. Amy Heuslein, Regional Environmental Protection Officer, BIA Western Office Branch at amy.heuslein@bia.gov.
- Faxed comments could be sent to the attention of Mr. Paul Schlafly at 435-674-9714 or Ms. Amy Heuslein at 602-379-3833.
- Comments could be submitted via "submit comment" tab on the BIA project website at http://projects2.pirnie.com/MoapaSolar/index.cfm?fuseaction=comments.

This page intended to be blank.

3. Scoping Content Analysis

3.1. Comment Processing

Comment letters and/or forms were numbered sequentially (beginning with 1) and labeled with a comment type code indicating the entity from which it was received (Table 3-1).

Table 3-1:
Comment Type Codes

Type	Type Code
Individual	I
Government Agency	G
Non-governmental Organization (special interest)	O
Business	B
Tribe	T

This combination of comment type code and number assignment to each letter provides a unique identifier for each letter in which to cross-reference comments received.

3.2. Comment Analysis

Following the labeling of alphanumeric identifiers, individual comments of all letters were reviewed. Letters may or may not have contained multiple comments. Comments were categorized by topics and assigned codes corresponding to their respective resource issue (Table 3-2). This type of analysis allows for specific comments to be evaluated and grouped by general topic or issue.

Table 3-2:
Resource Issue Identification

Resource Code	Resource Issue
ALT	Alternative
AQ	Air Quality
CCE	Climate Change Effects
CUM	Cumulative Impacts
HAB	Habitat
HAZ	Hazardous Materials / Waste Management
HYD	Hydrology
MS	Miscellaneous
PN	Purpose and Need
PV	Photovoltaic
VEG	Vegetation
WLD	Wildlife

3.3. Comment Disposition

Following categorization and coding of resource issues, comments were then coded according to their disposition. The disposition of a comment refers to the way the comment would be addressed in the EIS. Comments fell into one of six categories (Table 3-3).

Table 3-3:
Comment Disposition

Disposition Code	Comment Disposition	Explanation
PRO	Process	Identifies certain elements of the NEPA process that must be documented and disclosed in the EIS, but does not require specific resource analysis in the EIS.
PN	Purpose and Need	Requires additional documentation or clarification of the project Purpose and Need.
ALT	Alternatives Development	Requires analysis of existing alternatives or consideration of new alternatives.
IA	Impact Analysis	Requires EIS analysis of impacts to specific resources of concern.
OOS	Out of Scope	Comments receiving the disposition code OOS are not addressed in the EIS. These are comments that are not within the scope of the BIA's decision regarding the proposed solar facility.

3.3.1. Summary of Scoping Comments from Letters and Forms

Table 3-3 describes the four broad categories that each substantive scoping comment was designated to: Process, Purpose and Need, Alternatives Development, and Impacts Analysis (including resource-specific concerns and cumulative impacts). A detailed record of all formal comments is arranged by category and can be found in Appendix C.

3.3.2. Summary of Informal Comments from Notes Taken During the Public Scoping Meetings

Comments received during the public scoping meeting from members of the public and agency officials were noted by the court reporter during the meeting. These comments are summarized in section 3.3.3 Informal Comment Summary.

3.3.3. Informal Comment Summary

3.3.3.1. Process

The end date for comment submissions was clarified as March 7, 2011.

The address for comment submissions was clarified and attention was directed to the comment cards displaying the receiving agency's address.
Questions regarding electronic submission of comments were asked and information was provided for such submission.

3.3.3.2. Purpose and Need

It was clarified that the project area was 2,000 acres.
Full support was expressed for the project from the **International Brotherhood of Electrical Workers**, Local 57.

3.3.3.3. Impact Analysis

Vegetation
Concern was expressed regarding rare plant surveys.

Cumulative Impacts
Concern was expressed regarding cumulative impacts from the proposed project and programmatic proposed solar energy to the southwest of the proposed project, (and vice versa). Additionally, concern was expressed regarding cumulative impacts from the TransWest Express transmission line that exists in the same area.

3.3.3.4 Out of Scope

A question was asked why the tribe was not the lead agency.

This page intended to be blank.

APPENDIX A: SCOPING MEETING ATTENDEES

This page intended to be blank.

Table A-1. Public Scoping Meetings Attendees

Name	Address	Email Address	Organization/Company
Wednesday, February 23, 2011 - Tribal Hall on the Moapa River Indian Reservation			
Josh Reid	100 City Parkway, #1600 Las Vegas, Nevada 89106	jreid@bhfs.com	Moapa Paiutes BHFS
Allen W. Gross	517 University Drive Tempe, Arizona 85281	halgros@hallockgross.com	BIA
Amy Heuslein	2600 North Central Avenue Phoenix, Arizona 85004	amy.heuslein@bia.gov	BIA
Ian Zabarte	Box 134 Moapa, Nevada 89025	ianz@mvdsl.com	MBOP
Mike Haller	180 North 200 E St. George, Utah 84771	michael.haller@bia.gov	BIA
Tim Frabbiele	Police Department - Moapa		Moapa
Eric Spannbavre	Police Department - Moapa		Moapa
Lucy Spotted Eagle	8709 Grand Pine Avenue	spottedeagel@cox.net	Moapa Tribe
Kimberly Lowe			Court Reporter
Tom Tureen		thomast@kroadpower.com	K Road
Garry Cantley	2600 North Central Avenue Phoenix, Arizona 85004	garry.cantley@bia.gov	BIA-WRO
Mike Donahue	Overton, Nevada		Moapa Valley Progress
Tamera Dawes	2600 North Central Avenue Phoenix, Arizona 85004	tamara.dawes@bia.gov	BIA-WRO
Robert Volpert	Moapa Tribe	rvolpert@mvdsl.com	Moapa Tribe
Paul Schlafly	BIA Southern Paiute Agency St. George, Utah 84771	paul.schlafly@bia.gov	BIA-SPA
Leroy Spotted Eagle	Las Vegas, Nevada	spottedeagel@cox.net	Moapa Tribe
Keith Heffelfinger	2334 Fenton Parkway # 201 San Diego, California 92108	keithh@kroadpower.com	K Road
Harlu Bau	Moapa, Nevada 89025		
Sean Gallagher	2600 10th Street, Suite 635 Berkely, California 94710	seang@kroadpower.com	K Road

Name	Address	Email Address	Organization/Company
Kellie Youngbear	BIA Southern Paiute Agency St. George, Utah 84771	kellie.youngbear@bia.gov	BIA-SPA
William Anderson	1 Lincoln Drive Moapa, Nevada 89025	wanderson@mvdsl.com	MBOP
Manuel Savala	1 Pipe Spring Road	msavala@kaibabpaiute.nsn.gov	Kaibab Tribe
Eric Lee	#6 Pepost Moapa, Nevada 89025	ericlee@mvbsl.com	MBOP
Aletha Tom	#45 Lincoln Street Moapa, Nevada 89025		MBOP
Calvin Mayer	Moapa, Nevada 89025		MBOP
Shirley Anderson	21 Bowlin Street Moapa, Nevada 89025	sanderson@mvdsl.com	MBOP
Ural S. Begy	Lot # 12, Seg Miller Street Moapa, Nevada 89025		MBOP
Vickie Simmons	P.O. Box 93 Moapa, Nevada 89025	vickiesimmons@yahoo.com	Tribal Member - MBOP
Jennifer Samson	P.O. Box 26 Moapa, Nevada 89025		Tribal Member - MBOP
Thursday February 24, 2011 - Conference Room , BLM office.			
Amy Heuslein	2600 North Central Avenue Phoenix, Arizona 85004	amy.heuslein@bia.gov	BIA
Allen W. Gross	517 W University Drive Tempe, Arizona 85281	halgros@hallockgross.com	Hallock and Gross
Robert Volpert	PO Box 340 Moapa, Nevada 89025	rvolpert@mvdsl.com	Moapa Band of Paiutes (AD)
Keith Heffelfinger	2334 Fenton Parkway # 201 San Diego, California 92108	keithh@kroadpower.com	K Road Power
Garry Cantley	2600 North Central Avenue Phoenix, Arizona 85004	Garry.Cantley@bia.gov	BIA-WRO
Brenda Wilhight	4701 N Torrey Pines Drive Las Vegas, NV 89081	brenda.wilhight@blm.gov	BLM

Name	Address	Email Address	Organization/Company
William Anderson	1 Lincoln Drive Moapa, Nevada 89025	wanderson@mvdsl.com	MBOP
Josh Reid	100 City Parkway # 1600 Las Vegas, Nevada 89106	jreid@bhfs.com	MBOP/BHFS
Greg Seymour	7465 W Lake Mead # 105 Las Vegas, Nevada 89128	greg.seymour@wildnevada.org	Nevada Wilderness Project
John Keysor	Kaibab Pauite Tribe	jkeysor@kaibabpaiute.nsn.gov	Kaibab Paiute Tribe
Kathleen Sprowl		kathleen_sprowl@blm.gov	BLM
Judy Bundorf	1800 Sterling Pt Court Henderson, Nevada 89012	jbundorf@cox.net	individual
Wayne Bundorf	1800 Sterling Pt Court Henderson, Nevada 89012		individual
Jane Feldman		feldman.jane@gmail.com	Sierra Club
Paul Schlafly	BIA Southern Paiute Agency St. George, Utah 84771	paul.schlafly@bia.gov	BIA-SPA
Mike Haller	180 North 200 E St. George, Utah 84771	michael.haller@bia.gov	BIA
Edward Gering	808 N Lamb Blvd. Las Vegas, Nevada 89110	eagering@IBEW357.net	IBEW L.V. # 357
Lamare Jones	808 N Lamb Blvd. Las Vegas, Nevada 89110	ljones@IBEW357.net	IBEW L.V. # 357
Sean Gallagher	2600 10th Street, Suite 635 Berkely, California 94710	seang@kroadpower.com	K Road
John Evans	4701 North Torrey Pines Las Vegas, Nevada 89081	john.evans@blm.gov	BLM/LVFO
Kellie Youngbear	180 North 200 E St. George, Utah 84771	kellie.youngbear@bia.gov	BIA
Kimberly Lowe			Court Reporter
David Jones	808 Lamb Blvd Las Vegas, Nevada 89110	drjones@IBEW357.com	IBEW L.V. # 357
Mark Spenser	4701 North Torrey Pines Las Vegas, Nevada 89081	mark.spencer@blm.gov	BLM

Name	Address	Email Address	Organization/Company
Ian Zabarte	Box 340 Moapa, Nevada 89025	ianz@mvdsl.com	Moapa Band Paiutes
Rob Mrowka	4261 Lily Glen Court N Las Vegas, Nevada 89032	rmrowka@biologicaldiversity.org	Center for Biological Diversity

Moapa Band of Paiute Indians Photovoltaic Solar Facility, Public Scoping Meetings

BUREAU OF INDIAN AFFAIRS (BIA)
SOUTHERN PAIUTE AGENCY
180 North 200 East Suite # 111
St. George, Utah 84771
February 23, 2011

Please Sign-In

Name	Address	Email	Organization/Company
Josh Reid	100 City Pkwy. #1600 Las Vegas, NV 89106	jreid@BHFS.com	Moapa Paiutes/ BHFS
Allen McGuss	5717 W University Pl Tempe AZ 85283	halguss@hallidaguss.com	BIA
Amy Heuslein	2600 No. Central Ave Phoenix, AZ 85004	amy.heuslein@bia.gov	BIA
Ian Zabarte	BOX 124 Moapa, NV	ian2@mvdsl.com	NDOP
MIKE HALLER	180 N. 200. E. ST, GEORGE, UT	michael.haller@bia.gov	BIA
Tim Frabbiele	Police Dept - Moapa		Moapa
Eric Spannbauer	"		"
Lucy Spotted Eagle	8709 Gilkand Pine AR	spottedeagle@cox.net	
Kimberly Lowe	Court Reporter		
Tom Tureen	K Road	thomas@kroadpower.com	K Road

Moapa Band of Paiute Indians Photovoltaic Solar Facility, Public Scoping Meetings

BUREAU OF INDIAN AFFAIRS (BIA)
SOUTHERN PAIUTE AGENCY
180 North 200 East Suite # 111
St. George, Utah 84771
February 23, 2011

A-7

Please Sign-In

Name	Address	Email	Organization/Company
Garry Cantley	2600 N. Central Ave. Phoenix AZ 85004	Garry.Cantley@bia.gov	BIA-LRO
MIKE LONAHCEE	OVERTON		MV PROGRESS
Tamera Dawes	2600 N. Central Ave PHX AZ 85004	Tamera.dawes@bia.gov	BIA-WRO
Robert Volpert	Moapa Tribe	rvolpert@mvdsl.com	Moapa Tribe
PAUL SCHLAFLY	BIA Southern Paiute Agency St. George, UT	paul.schlafly@bia.gov	BIA-SPA
Cody Spotted Eagle	LAS VEGAS, NV	SPOTTED EAGLE@COMCAST.NET	MOAPA TRIBE
Keith Aeffelfinger	2334 Fenton Parkway #201 San Diego, CA 92108	Keith@kroadpower.com	K ROAD
Karla Bar	Moapa NV 89025		
Sean Gallagher	2600 10th St. Ste 635 Berkeley CA 94710	sgallagher@kroadpower.com	K Road
Kellie Youngbear	BIA, Southern Paiute Agency St. George, Utah	kellie.youngbear@bia.gov	BIA-SPA

Moapa Band of Paiute Indians Photovoltaic Solar Facility, Public Scoping Meetings

BUREAU OF INDIAN AFFAIRS (BIA)
SOUTHERN PAIUTE AGENCY
180 North 200 East Suite # 111
St. George, Utah 84771
February 23, 2011

Please Sign-In

Name	Address	Email	Organization/Company
William Anderson	1 Lincoln Drive Moapa NV 89025	wanderson@mvdsl	MBOP
Manuel Savala	1 Pipe Spring Rd.	MSAVALA@kaibabpaiute-nsn.gov	KAIBAB T.
Eric Lee	#6 papoose st Moapa NV. 89025	Eric.Lee@MVDSL	MBOP
Aletha Tom	#45 Lincoln St.		MBOP
Calvin Meyer			
Shirley Anderson	21 Bowlin St. Moapa NV	sanderson@mvdsl.com	MBOP
Urel S Bagley	Lot # 12 SEC miller st		MBOP

Moapa Band of Paiute Indians Photovoltaic Solar Facility, Public Scoping Meetings

BUREAU OF INDIAN AFFAIRS (BIA)
SOUTHERN PAIUTE AGENCY
180 North 200 East Suite # 111
St. George, Utah 84771
February 23, 2011

Please Sign-In

Name	Address	Email	Organization/Company
VICKIE SIMMONS	PO BOX 93 MOAPA NV 89025	VickiesSimmons@yahoo.com	Tribal Member MBOP
Jennifer Damson	P.O. BOX 26, moapa NV 89025		Tribal member

A-9

Moapa Band of Paiute Indians Photovoltaic Solar Facility, Public Scoping Meetings

BUREAU OF INDIAN AFFAIRS (BIA)
SOUTHERN PAIUTE AGENCY
180 North 200 East Suite # 111
St. George, Utah 84771
February 24, 2011

Please Sign-In

Name	Address	Email	Organization/Company
Amy Heuslein	2600 N. Central Ave Phoenix, AZ 85004	amy.heuslein@bia.gov	BIA
Allen W Gross	517 W University Pkwy Tempe AZ 85281	halgrose hallridgwss.com	H/G
Robert Volpert	PO Box 340 Moapa NV 89025	rvolpert@mvdsl.com	Moapa Band of Paiutes (BIA)
Keith Heffelfinger	2334 Fenton Parkway #201 SAN DIEGO, CA. 92108	KeithH@Kroadpower.com	K. ROAD. POWER.
Gavry Cantley	2600 N. Central Ave Phoenix, AZ 85004	Gavry.Cantley@bia.gov	BIA-LWRO
Brenda Wilhelm	4701 N Torrey Pines Dr Las Vegas NV 89149	Brenda-wilhight@blm.gov	BLM
Peter Kempen	1788 W 625 S. VERNAL, UT	hpkempen47@easilink.com	RETIRED FORMER SERVICE BLM
William Anderson	1 Lincoln drive Moapa NV 89025	wanderson@mvdsl.com	MBOP
Josh Reid	100 City PKWY #1600 Las Vegas 89106	Jreid@bhfs.com	MBOP / BHFS
Greg Seymour	7465 W. Lake Mead #105 Las Vegas NV 89128	greg.seymour@wildernessgreg	NWP

Moapa Band of Paiute Indians Photovoltaic Solar Facility, Public Scoping Meetings

BUREAU OF INDIAN AFFAIRS (BIA)
SOUTHERN PAIUTE AGENCY
180 North 200 East Suite # 111
St. George, Utah 84771
February 24, 2011

A-11

Please Sign-In

Name	Address	Email	Organization/Company
John KEYSER	Kaibab Paiute Tribe	JKeyser@KaibabPaiute-NSN-GOV	
Kathleen Sprowl	BLM	KATHLEEN_SPROWL@BLM.gov	BLM
Judy Bundorf	1800 Sterling Pt. Ct Henderson 89012	jbundorf@cox.net	
Wayne Bundorf	"		
Jane Feldman		feldman.jane@gmail.com	Sierra Club
PAUL SCHLAFLY	BIA - St. George JT	paul.schlafly@bia.gov	BIA - SPA
MIKE HALLER	BIA - ST. GEORGE, UT 808 N. Lamb Blvd. L.V. NV 89110	michael.haller@bia.gov	BIA - SPA
Edward Gering	IBEW L.U. # 357 808 N. Lamb. Blvd. LV. 8	egering@IBEW357.Net	IBEW L.U. # 357
Lamare Jones	IBEW. Lu. 357	LJones@IBEW357.Net	IBEW. Lu 357.
Sean Gallagher	2600 10th St, Ste 635 Berkeley CA 94710	seang@kroadpower.com	K Road

Moapa Band of Paiute Indians Photovoltaic Solar Facility, Public Scoping Meetings

BUREAU OF INDIAN AFFAIRS (BIA)
SOUTHERN PAIUTE AGENCY
180 North 200 East Suite # 111
St. George, Utah 84771
February 24, 2011

A-12

Please Sign-In

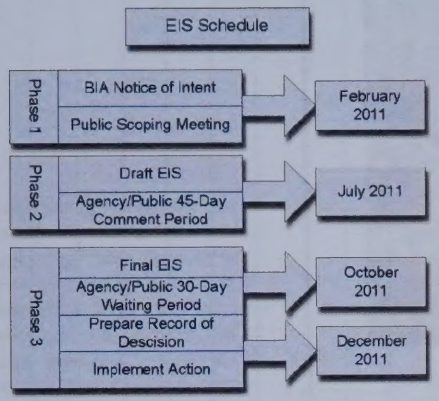
Name	Address	Email	Organization/Company
JOHN EVANS	4701 N TORREY PINES, LV	JOHN_EVANS@BLM.GOV	BLM/LVFO
Kellie Tanygren	180 N 200E St George, UT	kellie.tanygren@bia.gov	BIA
Kim Lane	COURT REPORTER		
DAVID JONES	808 LAMB BLVD. LV	DRJONES@IBEW357.NET	IBEW 357
Mark Spencer	4701 Torrey Pines	mark_spencer@blm.gov.	BLM —
Jan Zabarte	Box 340, Moapa, NV 89025	janz@mvdsl.com	Moapa Band Paiutes.
ROB MROWKA	4261 LILY GLEN CT N. LV, NV 89032	RMROWKA@BIOLOGICALDIVERSITY.ORG	CBD

This page intended to be blank.

APPENDIX B: SCOPING MEETING PAMPHLET AND COMMENT CARD

This page intended to be blank.

EIS Schedule



For More Information and Contacts

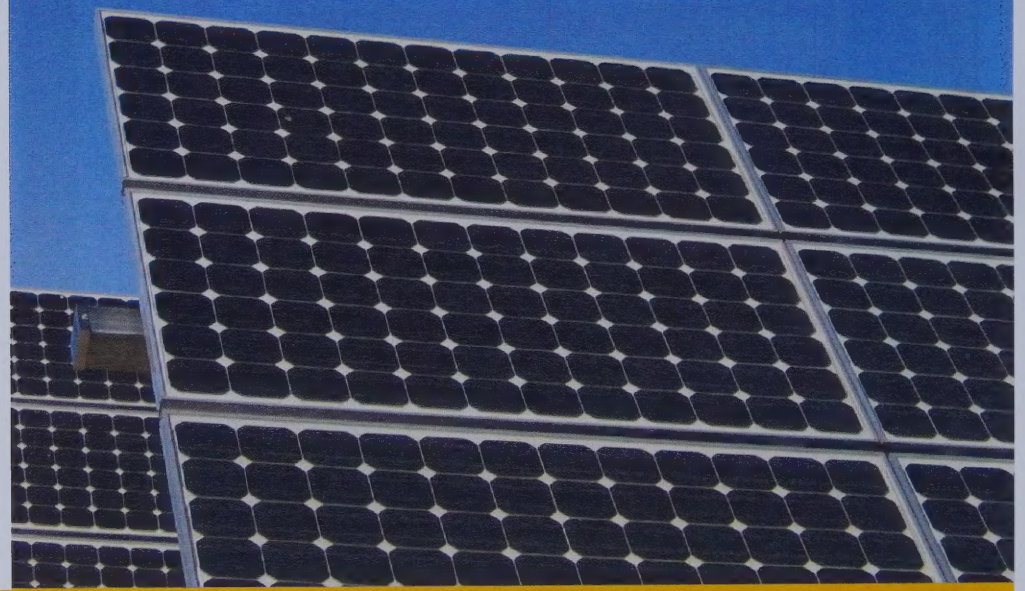
You may mail, hand carry or telefax written comments to

Ms. Amy Heuslein, Regional Environmental Protection Officer,
BIA Western Regional Office Branch of Environmental Quality Services, 2600 North Center Avenue, 4th Floor Mail Room, Phoenix, AX 85004-3008;
telephone: (602) 379-6750; fax (602) 379-3833;
email: amy.heuslein@bia.gov;
or
Mr. Paul Schlafly, Natural Resource Officer,
BIA Southern Paiute Agency, 180 N. 200 E., Suite 111 or P.O. Box 720, St. George, UT 84771;
telephone: (435) 674-9720; fax: (435) 674-9714;
email: paul.schlafly@bia.gov.

Please include your name, return address and the caption "EIS Scoping Comments, K Road and Moapa Band of Paiute Indians Solar Facility," on the first page of your written comments. Individual respondents may request confidentiality; however, anonymous comments will not be considered.

K Road Moapa Solar Project
Clark County, Nevada.

information factsheet



2011

Project Information

The National Environmental Policy Act (NEPA) requires federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions. To evaluate these environmental values a detailed document known as an Environmental Impact Statement (EIS) is prepared.

The proposed Federal action, taken under 25 U.S.C. 415, is the BIA approval of a solar energy ground lease and associated agreements entered into by the Moapa Band of Paiute Indians with K Roda Moapa Solar LLC (K Road), and associated approval of rights-of-way and easements, for K Road to construct and operate a solar photovoltaic facility with the potential to produce up to 350 megawatts (MW). The facility would be located entirely on Moapa tribal lands. The Moapa Band of Paiute Indians may use this EIS to make decisions under the Tribal Environmental Policy Ordinance. The BLM may use this EIS to support a decision for a proposed approximately 0.5 mile right-of-way across Federal public lands adjoining the Moapa River Indian Reservation. The right-of-way may be used to link the proposed solar generation facility to an existing substation on a transmission line with a rating up to 500 kilovolts. The United States Fish and Wildlife Service may use this EIS to support its decision under the Endangered Species Act.

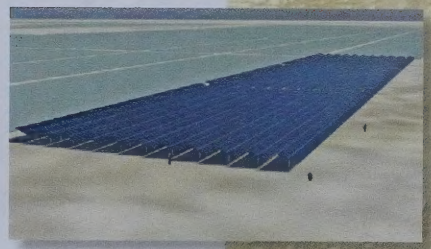
Project Facts

- Project area is 2,000 Acres on Moapa River Indian Reservation 30 miles north of Las Vegas
- Requires 4 miles of Power Transmission Lines to tie into the Nevada Electric Grid
- Requires 0.5 miles of water line to supply operational water
- Will generate up to 350 MW of clean, renewable electricity
- Will help utilities in the region meet renewable energy goals
- Will provide power to the Tribe-owned travel plaza on Interstate 15

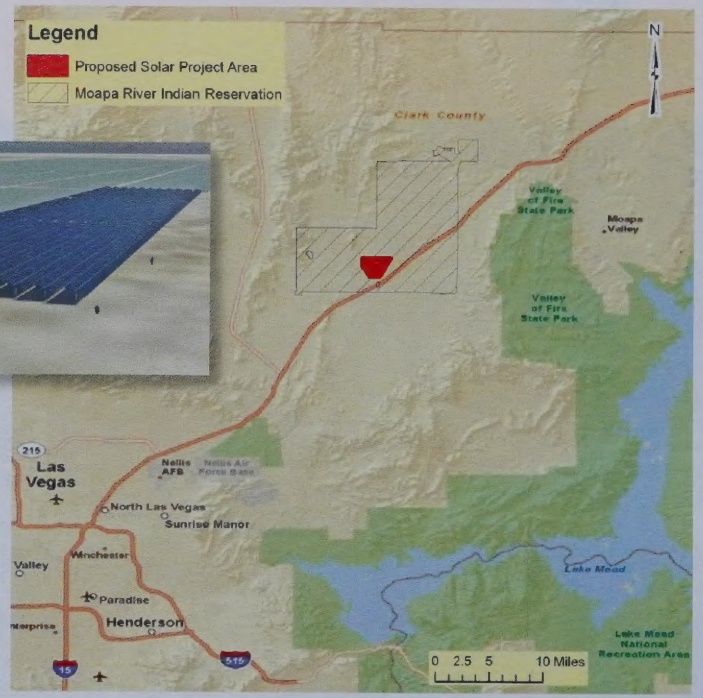
Resources

- **Threatened and Endangered Species: Desert Tortoise (Gopherus agassizii)**
  - Listed as a "threatened" species under the federal Endangered Species Act in 1990
  - Inhabit semi-arid grasslands, gravelly desert washes and sandy canyon bottoms below 3,500 feet
  - Have domed, brown shell can grow to be 9-15 inches in length, 4-6 inches high, can weigh up to 15 pounds and can live up to 100 years old
  - Spend November through February in a torpid state in underground burrows and become active in the spring and fall when they will forage
  - Unlawful to touch, harm, harass or collect a wild Desert Tortoise without a Permit from the US Fish and Wildlife Service (USFWS)
  - The BIA and Tribe are consulting with the USFWS to limit impacts to the Tortoise
  - Tortoise on-site will likely be relocated to a suitable area to prevent impacts

Project Location



Site Rendering



- **Cultural Historical Resources:** *None found during surveys*
- **On-site Vegetation: The site contains eight cactus and one yucca species**

  Cactus and yucca will likely be relocated to limit impacts.
  - Cylindropuntia bigelovii - teddy bear cholla
  - Cylindropuntia ramosissima - pencil cactus
  - Cylindropuntia echinocarpa - silver cholla
  - Echinocactus polycephalus - cottontop cactus
  - Echinocereus engelmannii - hedgehog cactus
  - Ferocactus cylindraceus - barrel cactus
  - Mammillaria tetrancistra - fishhook cactus
  - Opuntia basilaris - beavertail cactus
  - Yucca schidigera - Mojave yucca
  - Cactus and yucca on-site will likely be relocated to a suitable area to prevent impacts

Comment Card

Bureau of Indian Affairs Scoping Meeting for NEPA EIS for the
Proposed K Road/Moapa Band of Paiute Indians Photovoltaic Solar Facility, Clark County, NV.

Name: _____ County: _____

Address: _____ City: _____ State: _____ Zip Code: _____

You may not comment anonymously. However, we will withhold your name if you check this box ☐

Comment (s): _____

Mail to: United States Department of the Interior -BUREAU OF INDIAN AFFAIRS
SOUTHERN PAIUTE AGENCY P.O. Box 720 St. George, Utah 84771

Thank You for your participation

Comment Card

Bureau of Indian Affairs Scoping Meeting for NEPA EIS for the
Proposed K Road/Moapa Band of Paiute Indians Photovoltaic Solar Facility, Clark County, NV.

Name: _____ County: _____

Address: _____ City: _____ State: _____ Zip Code: _____

You may not comment anonymously. However, we will withhold your name if you check this box ☐

Comment (s): _____

Mail to: United States Department of the Interior -BUREAU OF INDIAN AFFAIRS
SOUTHERN PAIUTE AGENCY P.O. Box 720 St. George, Utah 84771

Thank You for your participation

This page intended to be blank.

APPENDIX C: PUBLIC SCOPING COMMENTS SUMMARY TABLE

This page intended to be blank.

Table C-1. Scoping Comments Summary Table

Respondent Type	Letter Number	Comment Number	Comment Resource Code	Comment	Disposition
G	1	1	HYD	The U.S. Environmental Protection Agency (EPA) supports the increase in renewable energy resource development, as recommended in the National Energy Policy Act of 2005. Using renewable energy resources, such as solar power, can help the nation meet its energy requirements without generating greenhouse gas emissions. Our main interest is that impacts to ephemeral streams (desert washes) be minimized because of the water quality and habitat benefits these resources provide. We appreciate the opportunity to provide comments on the preparation of the DEIS, and look forward to continued participation in this process.	IA
G	1	2	PN	The DEIS should clearly identify the underlying purpose and need for the project and for which alternatives are being proposed. • Identify and describe the underlying problem, deficiency or opportunity that the action is meant to address. • The NOI identifies two purposes: the first is to use the Tribe's solar energy resources including construction of a transmission line to the Moapa Travel Center; the second is to generate renewable energy to assist utilities in meeting their renewable energy goals.	PN
G	1	3	ALT	If the underlying need for the travel center is to reduce emissions from the diesel generator and to provide a cleaner energy source, consideration should be given to including photovoltaics on the roof of the travel center, if feasible. This could also serve to highlight the environmental benefits of the larger project through a more visible connection to the Tribe. • Interpretive informational signs could also be present at the travel center to educate the public about the importance of clean energy projects towards reducing air pollutants including greenhouse gas emissions.	ALT
G	1	4	PN	For the solar energy component, the DEIS should discuss the proposed project in the context of the larger energy market that the project would serve; identify potential purchasers of the power produced; and discuss how the project will assist utilities, the Tribe, or the state, as applicable, in meeting any renewable energy portfolio standards and goals.	OOS
G	1	5	ALT	Reasonable alternatives should included, but are not necessarily limited to, alternative locations on the reservation, alternative configurations and mountings, alternative capacities, and alternative PV technologies.	ALT
G	1	6	ALT	The DEIS should provide a discussion of the reasons for the elimination of alternatives which are not evaluated in detail.	PRO
G	1	7	ALT	A reasonable range of alternatives will include options for avoiding environmental impacts. The Council on	PRO

				Environmental Quality (CEQ) Regulations for implementing the (NEPA) state that alternatives should include appropriate mitigation measures not already included in the proposed action or alternatives (40 CFR § 1502.14(f)).	
G	1	8	HYD	Consistent with 40 CFR § 1502.14(f), EPA recommends an alternative be developed having a project configuration that avoids impacts to ephemeral drainages or desert washes to the maximum extent possible.	ALT
G	1	9	CUM	The ephemeral wash resources are being cumulatively impacted by the numerous large-scale solar projects being proposed in the desert. • Desert washes perform a diversity of hydrologic, biochemical, and geochemical functions that directly affect the integrity and functional condition of higher-order waters downstream. • Healthy ephemeral waters with characteristic plant communities control rates of sediment deposition and dissipate the energy associated with flood flows. • Ephemeral washes also provide habitat for breeding, shelter, foraging, and movement of wildlife. • Many plant populations are dependent on these aquatic ecosystems and adapted to their unique conditions. Many of these values are present regardless of whether the washes are deemed jurisdictional waters of the U.S. under Section 404 of the Clean Water Act.	IA
G	1	10	ALT	The alternative for ephemeral waters would be defined by 1) avoiding placement of support structures in washes; 2) utilizing existing natural drainage channels on site, such as earthen berms or channels, rather than concrete-lined channels; 3) committing to the use of natural washes, in their present location and natural form, and including adequate natural buffers, for flood control, to the maximum extent practicable, 4) minimizing the number of road crossings over washes and designing necessary crossings to provide adequate flow-through during storm events, and 5) avoiding complete clearing and grading of the site by evaluating the mounting of PV panels at sufficient height above ground to maintain natural vegetation and reduce impacts to drainages.	ALT
G	1	11	ALT	We strongly recommend that the jurisdictional delineation of waters of the U.S. be consulted during the development of alternatives. If it appears that a Clean Water Act Section 404 permit will be needed, it is important that the NEPA alternatives be consistent with the alternatives analysis required for the 404 permit.	PRO
G	1	12	HYD	The DEIS should estimate the quantity of water the project will require during the construction phase and during operations (cleaning the PV panels during routine maintenance, administration and sanitation uses in the small on-site office, etc.). • Describe the source of this water and potential effects on other water users. • If groundwater will be used, the potentially-affected groundwater basin should be identified	IA

				and impacts to groundwater recharge, springs or other surface water bodies and biologic resources should be analyzed. Potential for subsidence should be identified.	
G	1	13	CUM	The DEIS should include a discussion of cumulative impacts to groundwater resources within the hydrographic basin, including reasonably foreseeable impacts from other large-scale solar installations that have been proposed. Available technologies to minimize or recycle water should be identified. Any landscaping around buildings should utilize xeric native plants.	IA
G	1	14	CCE	Because of potential climate change affects on water quality, the DEIS should describe water reliability for the proposed project and clarify how existing and/or proposed sources may be affected by climate change. Discuss adaptability of the project to these changes.	IA
G	1	15	HAZ	The DEIS should also address the potential effects of project discharges on surface and groundwater quality, including wastewater discharges from the office and any maintenance buildings.	IA
G	1	16	HYD	Pursuant to 40 CFR § 230, any permitted discharge into waters of the United States (WOUS) must be the least environmentally damaging practicable alternative (LEDPA) available to achieve the project purpose. The DEIS should include, and craft NEAP alternatives consistent with, evaluating project alternatives in this context, in order to demonstrate the project's compliance with the 404(b)(1) Guidelines. If under the proposed project, dredged or fill material would be discharged into WOUS, the DEIS should discuss alternatives to avoid those discharges.	IA
G	1	17	HYD	The DEIS should describe all water of the U.S. that could be affected by the project alternatives, and include maps that clearly identify all waters within the project area. The discussion should include the acreages and channel lengths, habitat types, values, and functions of these waters.	PRO
G	1	18	HYD	Loss of desert wash waters is accelerating with predictable impacts to endangered species habitat, groundwater recharge (a primary source of drinking water) and the natural flood control services that these steams provide.	IA
G	1	19	HYD	The Rapanos and SWANCC decisions dramatically impacted the federal government's ability to implement the Clean Water Act in desert environments. Nowhere is the impact of Rapanos more apparent than in renewable energy project planning. • In 2010, we have seen that nearly identical projects by the same applicant using the same technology can have dramatically different impacts depending on whether desert streams on site are discovered "waters of the U.S. • Most of the river miles in Nevada (88%) are seasonal or ephemeral, where infrequent, short-lived but high-volume flash flows are the norm. • Theses flows, although rare, are essential to the integrity of the nation's arid ecosystem, underscoring the importance of their protection.	IA

				• Desert streams are important to humans too, as they recharge groundwater by storing and circulating water in the stream network across a landscape accounting for up to 40% of annual regional aquifer recharge during wet years. • As populations continue to grow and we confront the effects of climate change, these challenges will only be exacerbated. • It is for this reason that EPA recommends that a desert or ephemeral wash avoidance alternative be created, which would be consistent with the goals and objectives of NEPA to promote efforts which will prevent or eliminate damage to the environment and biosphere (42 USC 4331).	
G	1	20	AQ	The DEIS should provide a detailed discussion of ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards (NAAQS) and nonattainment areas, and potential air quality impacts of the project, including cumulative and indirect impacts, for each fully evaluated alternative.	IA
G	1	21	AQ	Emission should be estimated for the construction phase, as well as for the operational phase from maintenance activities and ancillary operations. Construction-related mitigation measures should be discussed.	IA
G	1	22	AQ	The Las Vegas 8-hour ozone nonattainment area excludes the Moapa River Indian Reservation; however, the reservation is surrounded by this nonattainment area and emissions from the project have the potential to impact this area. Therefore emissions of ozone precursors, (volatile organic carbons (VOCs) and oxides of nitrogen (NOx)) should be reduced through mitigation measures, especially during the construction phase.	IA
G	1	23	AQ	EPA finalized an attainment designation for particulate matter less than 10 microns (PM10) for the Las Vegas Planning Area to the southwest of the reservation in August 2010. However, reasonable mitigation measures to reduce fugitive dust should still be implemented, for the benefit of localized receptors such as construction workers, and to reduce impacts to existing flora and fauna habitats.	IA
G	1	24	AQ	Standard mitigation measures should be implemented to reduce impacts associated with emissions of particulate matter, ozone precursors, and mobile source air toxics from construction-related activities. The following are recommended: Fugitive Dust Source Controls: • Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions. • Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization on surfaces under windy conditions. • When hauling material and operating non-earthmoving equipment, prevent spillage and	IA

				limit speeds to 15 mph and speed of earth-moving equipment to 10 mph. Mobile and Stationary Source Controls: • Maintain and tune engines per manufacturer's specification to perform at EPA certification levels, where applicable, and to perform at verified standards applicable to retrofit technologies. • Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained. • Prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations. • If practicable, lease new, clean (diesel or retrofitted diesel) equipment. In general, commit to the best available emissions control technology. Tier 4 engines should be used for project construction equipment to the maximum extent feasible. • Utilize EPA-registered particulate traps and other appropriate controls where suitable to reduce emissions of diesel particulate matter and other pollutants at the construction site. Administrative controls: • Develop a construction, traffic and parking management plan that minimizes traffic interference and maintains traffic flow. • Identify any sensitive receptors in the project area and minimize impacts to these populations. If applicable, locate construction equipment and staging zones away from sensitive receptors and fresh air intakes to buildings and air conditioners.	
G	1	25	HAB	Impacts to biological resources can be substantial in desert habitats. Unless projects establish strict conservation goals for desert aquatic resources, renewable energy production may come at the expense of desert biodiversity. Less than 1% of the vegetation in deserts is riparian, yet most desert animal species, whether birds, mammals, reptiles or amphibians, rely on riparian habitat for at least part of their life cycle. A desert or ephemeral wash avoidance alternative or strategy is consistent with the goals and principles of NEPA.	IA
G	1	26	HAB	PV array fields typically are graded flat with all vegetation removed before installation begins. Soils under PV arrays are frequently sterilized to prevent weed growth, which prevents the natural re-vegetation of native plants that could minimize erosion and provide wildlife habitat.	IA
G	1	27	HAB	The potential impacts of construction, installation, and maintenance activities on habitat and species should be discussed in the DEIS. Discuss the impacts associated with an increase of shade in the desert environment on vegetation and species, and impacts associated with constructing fences around the project site.	IA
G	1	28	HAB	Efforts to preserve vegetation and habitat should be pursued. In arid areas, disturbed vegetation is slow to	ALT

				recover. It may be possible to mount PV panels at sufficient height above ground to maintain natural vegetation and drainage. Practices that preserve habitat, minimize weed invasion, and prevent erosion should be incorporated into the project.	
G	1	29	HYD	If surface waters could be impacted from any groundwater extraction, impacts to aquatic species that utilize them should be discussed. Maintenance requirements for the alternatives should consider the maintenance road use frequency and how this could impact desert species and habitat.	IA
G	1	30	WLD	We understand that formal consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act will occur for the federally listed Desert Tortoise and other potentially impacted listed species. We recommend that the Service's Biological Opinion be included as an appendix to the EIS.	PRO
G	1	31	WLD	Analysis of impacts and mitigation on listed species should include: (1) baseline conditions of habitats and populations of the covered species; (2) a clear description of how avoidance, mitigation and conservation measures will protect and encourage the recovery of the covered species and their habitats in the project area; and (3) monitoring, reporting and adaptive management efforts to ensure species and habitat conservation effectiveness.	IA
G	1	32	VEG	Executive Order (E.O.) 13112, *Invasive Species* (February 3, 1999), mandates that federal agencies whose actions may affect the status of invasive species shall use their relevant authorities to prevent their introduction, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause. The DEIS should describe how the project will meet the requirements of E.O. 13112. We recommend including an invasive plant management plant for the monitoring and control noxious weeds.	IA
G	1	33	CUM	Cumulative impact analyses describe the threat to resources as a whole, presented from the perspective of the resource instead of from the individual project. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR § 1508.7). Discussion of cumulative impacts are usually more effective when included in the larger discussions of environmental impacts from the action (the environmental consequences chapter), as opposed to locating cumulative impact analyses in a separate chapter. The DEIS should describe the methodology used to assess cumulative impacts. We recommend the methodology developed jointly by EPA, the Federal Highway Administration, and the California Department of Transportation, available at: http://www.dot.ca.gov/ser/cumulative_guidance/approach.htm. While this methodology was developed for transportation projects, the principles and steps in this guidance offer a systematic way to analyze cumulative impacts for any project.	PRO
G	1	34	CUM	There are currently many solar energy projects being proposed on Bureau of Land Management (BLM) land in	IA

				the desert southwest. The analysis of cumulative impacts should consider these other projects, in addition to other developments in the area and general resource trends, on the resources that would be affected by the proposed project. As mentioned, cumulative impacts to desert washes and ecosystems are occurring and will continue to occur from multiple large solar installations in the desert, therefore cumulative impacts to this resource should be thoroughly discussed for this project. We also recommend thorough discussions of cumulative impacts to water resources and the Desert Tortoise.	
G	1	35	CCE	Climate change is likely to contribute cumulative impacts to some resources, including water, air and biological resources. The additive impacts from climate change on resources affected by the project should be discussed. In discussing the direct climate change effects from the project, include impacts that the project will have on carbon sequestration from the loss of desert vegetation and soil disruption. Recent studies have estimated that the desert biome absorbs an amount of carbon comparable to temperate forests and grassland ecosystems. The DEIS should also document the significant benefits from reduced greenhouse gas emissions from the proposed project as it compares to energy production associated with fossil fuels.	IA
G	1	36	HAZ	The DEIS should address potential direct, indirect and cumulative impacts of waste generation, including hazardous waste, from construction and operation. The document should identify projected waste types and volumes, including from maintenance vehicles, and identify expected storage, disposal, and management. Identify the applicability of federal hazardous waste requirements. The generation of hazardous waste should be minimized. If PV panel trackers will utilize hazardous materials such as refrigerants, discuss and evaluate potential impacts from accidental or unexpected releases on environmental resources. Alternative tracking methods that minimize hazardous materials use should be evaluated.	IA
G	1	37	PV	From a life-cycle perspective, production of PV components results in environmental impacts, from relatively high energy use to the use of large quantities of bulk materials and small quantities of scarce or toxic materials. PV production companies can minimize their environmental impacts during raw material extraction, minimize the amount of rare materials used in the product, and facilitate future material recovery for reuse or recycling. To the extent possible, EPA recommends that the project source PV components from a company that minimizes environmental impacts during production.	IA
O	2	1	MS	On behalf of the Center for Biological Diversity, please accept this set of scoping comments regarding the Notice of Intent to prepare an Environmental Impact Statement (EIS) for the K Road Moapa Solar Energy Project. The Center is a non-profit, public interest environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 315,000	OOS

				members and on-line activists throughout Nevada and the United States.	
O	2	2	MS	We submit theses comments on behalf of our members, activists, staff, and members of the general public who are interested in protecting native species and their habitats in Nevada and particularly those lands that would be impacted by the proposed action.	OOS
O	2	3	PN	The development of renewable energy is a critical component of efforts to reduce carbon pollution and climate-warming gases, avoid the worst consequences of global warming, and to assist in meeting needed emission reductions. The Center strongly supports the development of renewable energy production, and the generation of electricity from solar power, in particular. However, like any project, proposed solar power projects should be thoughtfully planned to minimize impacts to the environment. In particular, renewable energy projects should avoid impacts to sensitive species and habitat, and should be sited in proximity to the areas of electricity end-use in order to reduce the need for extensive new transmission corridors and the efficiency loss associated with extended energy transmission. Only by maintaining the highest environmental standards with regard to local impacts, and effects on species and habitat, can renewable energy production be truly sustainable.	IA
O	2	4	MS	We are grateful for this opportunity to submit scoping comments to you for your consideration in preparing the draft environmental impact statement for this project. We present the following initial comments addressing those issues and concerns for your consideration:	OOS
O	2	5	HAB	Impacts on desert tortoise. The desert tortoise is protected as Threatened under the Endangered Species Act. The desert tortoise is continuing to decline throughout its range despite being under federal and state Endangered Species Acts protection as threatened. The project area lies in the Northeastern Mojave Recovery Unit for the desert tortoise, within potential occupied habitat, and outside of areas designated as critical habitat. Typically, as part of the preparation of the site for solar energy development, mass grading and leveling would be required, that would destroy tortoise habitat and render it unsuitable in perpetuity. Even if mass grading were not done, the habitat would be significantly degraded.	IA
O	2	6	ALT	NEPA requires that a range of meaningful alternatives be explored in the environmental review process. 42 U.S.C. §§ 4332(C)(iii), (E). The agency must "study, develop and describe appropriate alternative to recommend courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources". 42 U.S.C. § 4332(2)(E); *see also* 40 C.F.R. § 1502.14 (requires the EIS to examine all reasonable alternatives to the proposal).	PRO
O	2	7	HAB	The EIS must address the impacts of this project and other linked projects to the survival and recovery of desert tortoise in this recovery unit and take seriously the development of meaningful alternatives to this project that will avoid impacts to the species and its habitat. As the BIA is aware, it is increasingly difficult to find intact,	IA

				high quality desert tortoise habitat in private ownership that could be purchased and conserved to provide some mitigation for the loss of other occupied desert tortoise habitat in the Northeastern Mojave Recovery Unit such as the lands proposed for this solar plant. Therefore, avoiding impacts to this essential habitat and maintaining the largest possible areas of intact, high quality habitat is absolutely critical for recovery of the species.	
O	2	8	ALT	The DEIS must clearly address actions for avoiding, minimizing and mitigating impacts to the desert tortoise and its habitat. The BIA must first look to ways to avoid impacts to desert tortoise, for example, by identifying and analyzing alternative sites outside of tortoise occupied habitat, areas that have already been severely disturbed by prior land use, or by employing the alternative solar energy strategy of distributed power. The BIA must also look at ways to minimize any impacts that it finds to be unavoidable, for example by requiring designs that minimize ground disturbances, limiting access roads, and provide for functional tortoise access across the site. Mitigation measures might include the acquisition of lands that would be perpetually managed for conservation, or the funding of conservation management measures on federal lands or for tortoise research.	ALT
O	2	9	WLD	The Scientific Advisory Committee (SAC) of the U.S. Fish and Wildlife Service's Desert Tortoise Recovery Office has recently concluded that "translocation is fraught with long-term uncertainties, notwithstanding recent research showing short-term successes, and should not be considered lightly as a management option. When considered, translocation should be part of a strategic population augmentation program, targeted toward depleted populations in areas containing "good" habitat. The SAC recognizes that quantitative measures of habitat quality relative to desert tortoise demographics or population status currently do not exist, and a specific measure of "depleted" (e.g., ratio of dead to live tortoises in surveys of the potential translocation area) was not identified. Augmentations may also be useful to increase less depleted populations if the goal is to obtain a better demographic structure for long-term population persistence. Therefore, any translocations must be accompanied by specific monitoring or research to study the effectiveness or success of the translocation relative to changes in land use, management, or environmental condition. Translocation should be used as a tool to augment populations within depleted recovery units, not as a mitigation strategy to allow for development in desert tortoise habitat.	IA

O	2	10	WLD	Obviously, since this project has a federal nexus, consultation under the Endangered Species Act would be required. Such consultations must consider climate change impacts, including the need for maintaining habitat linkages between current and future desert tortoise habitat – see discussion below. The EIS must thoroughly disclose and analyze the impacts on the desert tortoise and its recovery and consider meaningful alternatives that would avoid significant impacts to the tortoise and other resources.	IA
O	2	11	CCE	Climate change and landscape linkages. In light of unprecedented climate change, animal and plant species will attempt to adapt by expanding their ranges north and upslope to cooler conditions mimicking their current habitats, and abandoning their present no longer hospitable ranges. At a 2008 Desert Manager Group symposium entitled, "Climate and Deserts Workshop", Wayne Spencer of the Conservation Biology Institute gave a compelling lecture on this likely scenario in which he called for the maintenance of broad ecological connectivity and the minimization of movement barriers to conserve species and ecological processes in the face of climate change. Such connectivity is not only important for the physical movement of species but perhaps more so for the conservation of genetic diversity and the prevention of genetic bottlenecks.	IA
o	2	12	CCE	At the same workshop, Kirsten Ironside presented on predicting climate change impacts. She presented historic data and modeling that suggests that species found abundantly in California and southern Nevada, such as the Joshua tree, will be rare or eliminated from their current ranges and given the means will be extending northward into Nevada and Utah. The project site could impose a significant barrier to future movement and gene flow between populations within the Northeastern Mojave Recovery Area, as well as with populations in other recovery areas. The EIS must disclose and analyze the projects' impacts to movement corridors and habitat connectivity taking into account the heightened importance of such corridors in light of climate change.	IA
O	2	13	CUM	Cumulative and connected actions. NEPA's implementing regulations state that agencies should consider similar, reasonably foreseeable actions together in the same environment review document when the actions "have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography," and the "best way to assess adequately [their] combined impacts [...] or reasonable alternatives" is to consider them together. 40 C.F.R.§1508.25(a)(C). It is important for federal agencies to consider connected actions together in a single NEPA process as opposed to segmenting review. *Daly v. Volpe*, 514 F.2d 1106, 1110 (9th Cir. 1975) (where actions are interconnected in terms of fulfilling a joint purpose it may be necessary to conduct a single NEPA review). Here the BIA should coordinate this NEPA process with the approval process for all of the connected actions including the transmission and water lines and substations that are	PRO

				proposed to serve this site. This would allow all of the projects' significant impacts to be fully considered together.	
O	2	14	CUM	In particular, the BIA should consider together the additive impacts to biological resources, including the desert tortoise and its habitat, from the proposed solar project and from the other proposed projects in the area to ensure that the true extent of impacts are fully disclosed and analyzed. BIA should not treat this critical analysis as a cumulative impacts question alone. Because the currently proposed projects are linked and interdependent they should be evaluated together under NEPA. Most importantly, this project will have direct impacts on desert tortoise populations in the Northeastern Mojave Recovery Unit; around 2,000 acres of tortoise habitat will be taken if it is approved and permitted for development. BIA must look at those impacts in a comprehensive way that would allow it to formulate meaningful alternatives that could avoid many of the impacts of these linked projects and where impacts remain that cannot be avoided through alternatives, provide for comprehensive minimization and mitigation measures that will ensure that impacts to this recovery unit are appropriately mitigated. Ultimately, BIA must ensure that the approval of these linked projects does not impair the recovery of the desert tortoise populations in the Northeastern Mojave Recovery Unit.	PRO
O	2	15	HYD	The project is within the Colorado River Hydrologic Basin and more specifically, it is in groundwater basin #216 – Dry Lake/Garnet Valley. The perennial yield for this basin has been set at 400 ac-ft/yr by the State Engineer based on available data. In 2002, the State Engineer issued Order 1169 stating that new applications for water in the carbonate-rock aquifer systems within Garnet Valley would be suspended to allow further study of the system. Recent withdrawals of groundwater have ranged from 797-1558 ac-ft/yr; additionally, the Las Vegas Valley Water District has leased 2200 ac-ft/yr of its current water rights to dry-cooled power plants in the valley. An additional 44,500 ac-ft/yr (55 million m^3/yr) of water rights have been applied for within the basin and are under consideration by the NDWR.	IA
O	2	16	CUM	Of particular concern regarding cumulative impacts is the proposal for a Bureau of Land Management ("BLM") Solar Energy Zone ("SEZ") adjacent to this project. The environmental compliance for the SEZ is currently underway, and the BLM has released a draft environmental impact statement that proposes 16,549 acres be developed for solar energy production.	IA
O	2	17	CUM	The K Road Moapa and BLM SEZ proposals both are reasonably foreseeable and affect the desert tortoise and other desert plant and wildlife species, and are in the same over extended carbonate ground water flow system, thereby potentially impacting the rare and imperiled species, including the Moapa dace and other rare desert fish and springsnails found in the Muddy River drainage. The cumulative effects analysis must take into account habitat destruction and water needs from all these	IA

				proposed projects and disclose their impacts on the desert environment and the plants and animals that inhabit it.	
O	2	18	VEG	There are at least two rare plant species of potential concern, the threecorner milkvetch (*Astragalus geyeri)* and the Las Vegas bearpoppy (*Arctomecon californica)*. Both are state listed under NRS 5427.260 as critically endangered and are BLM special status species. They are also considered by the Nevada Native Plant Society as meeting the federal definition for listing under the Endangered Species Act. At least two years of plant surveys should be conducted to confirm the absence of the species and if found to be present, protective measures should be established to avoid, minimize and mitigate impacts.	IA
O	2	19	MS	The Center wishes to be an active stakeholder in this planning process and requests that we be added to any stakeholder notification list the BIA may develop.	OOS
O	2	20	MS	Thank you for this opportunity to comments and we look forward to other opportunities to provide review and input.	OOS
O	3	1	MS	Please set up a system where every bill paid and every check made out is signed by two different people in two different departments who are not related. There is far too much stealing going on in government agencies. It seems every employee thinks they deserve to steal more than they are paid. Every penny of this solar installation should be going to members of the Paiute Tribe, not to crooked Nevada politicians and not to crooked government employees. Jean Public address if required.	OOS
I	4	1	MS	Please put me on the mailing list for the EIS on the Moapa Band's proposed Photovoltaic Solar Facility, from the earliest scoping notices and summaries through the final EIS and the ROD.	OOS

Table C-2. Contact Information for Respondents

Letter Number	Respondent Type	Last Name	First Name	Organization	Address	Date Received
1	Government	Vitulano	Karen	U.S. Environmental Protection Agency Review Office	Region IX 75 Hawthorne Street San Francisco, CA 94105	March 4, 2011
2	Organization	Mrowka	Rob	Center for Biological Diversity	4261 Lily Glen Court Las Vegas, NV 89032	March 4, 2011
3	Organization			Info PewTrusts		March 7, 2011
4	Individual	Friesema	Paul	Professor at Northwestern University	227 Scott Hall Evanston, IL 60208	March 7, 2011

APPENDIX D: SCOPING MEETING TRANSCRIPTS

This page intended to be blank.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

THE BLM SCOPING MEETING

THE SCOPING MEETING FOR NEPA ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED K ROAD/MOAPA BAND OF PAIUTE INDIANS PHOTOVOLTAIC SOLAR FACILITY, CLARK COUNTY, NEVADA
Las Vegas, Nevada
Wednesday, February 23, 2011

Reported by:
Kimberly M. Lowe
CCR No. 849
Job No. 156941

LAS VEGAS, NEVADA, WEDNESDAY, FEBRUARY 23, 2011
6:16 P.M. - 7:00 P.M.

PROCEEDINGS
-oOo-

CHAIRMAN ANDERSON: Welcome. I'm going to go ahead and introduce myself.

My name is William Anderson, chairman for the Paiute.

I'm going to go ahead and introduce Leroy Spotted Eagle. He's going to go ahead and give blessing today for our scoping meeting.

So if you don't mind, Leroy.

MR. SPOTTED EAGLE: I like to welcome you here today. My name is Leroy Spotted Eagle. I'm one of the spiritual leaders for the Southern Paiute Nation. So I'm asked to come and offer a blessing here for this meeting and for each and every one of us that are here tonight.

So if you bear with me, I'm going to talk to the creator for a while. So if you could in your own way, too, if you want to offer prayer to pray in your own way would be good too.

So thank you.

(Prayer.)

CHAIRMAN ANDERSON: Thank you very much, Leroy, for going ahead and saying that, you know. That resting on the heart, you need to go ahead and hear them say that about this.

With me just coming on as tribal chairman and go ahead and be part of this project, you know, it really makes me feel really good to see that this is what's going on and to see that as a project, the solar project.

In the past there's been other projects, developments where they're going to tear up the land and go ahead and cause erosion, other problems that may arise in the future; but to see something like this, a solar project come up about now. To see something like that available for our people and to see how it's going to go ahead and work mostly for us and as well as our children. Go ahead talk with all of our energies today, talking with the representatives that came out today. And I'm glad they did come out today, even though we might still be a little dusty. I know I still am.

It was something for me that I enjoyed to come out to go ahead and see. Talking with

the other the people, the other representatives that were there to show they're in full support of everything that we want to go ahead and do out here. You know, talking with our -- you know, from the Sierras Club to, you know, Fish and Wildlife and to people here at BLM, everybody here that did attend this, you know, I'm glad you did come out and go ahead and actually physically go out there and see the site.

And for me to go ahead and be a part of this -- a part of this project, it just made me understand that, you know, we're doing something with, you know, with mother earth.

We're trying to go ahead and work with mother earth as a part of a tribe, and to have that spiritual guidance and, you know, the way Leroy went ahead and set that out, it was something that we take pride here.

A lot of us here take a lot of pride in who we are, and to have to show that, you know, we are a sovereign entity. We are separated from Clark County and State of Nevada. It's just that they don't recognize what we have. And for us to go ahead and show who we are now to come out and step out of that and to be part of this power

industry that we're going to go ahead and be working with everybody here.

And you know, it's something that's been -- that corridor that's been along our reservation area. That's been there for so long and for us to finally go ahead and take advantage of the situation, to go ahead and see, you know, that, instead of being a burden across our land, we're now going to do something positive. We're doing something positive with it. To go ahead and show we're going to go ahead and be a force out there that's going to improve that, not only just for us here in the State of Nevada but as our reservation, and in full cooperation with everybody here that we've been working with so diligently, so hard working with everyone.

We want to make sure we want to be the -- you know, set the example. You know, I was talking with Amy about this before, but it -- you know, we want to go ahead and make sure we do everything we're supposed to. We want to go ahead and talk with every agency, talk with everybody out there, make sure that, you know, we're all on the same page. We're not -- you know, we got nothing to hide. To go ahead and

say, you know, hey, we're going to make this a backdoor deal or anything.

You know, we're willing to talk to everybody out there, anybody out there that's willing to go ahead and say anything about any comments. Like the scoping meeting today, we'll go ahead and take full consideration every comment that's being brought in. But to go ahead and bring that forward with us and to go ahead and show that just to other reservations that this is going to be one of the largest solar plants within Indian nation. And to be that forefront, to be that reservation to be right there out in front to go ahead and say that we are the people, that we're trying to go ahead to set that example to go green.

You know, it starts with the multi-facility that we're trying to go ahead and start with the, you know, recyclables, trying to reuse, you know, all that waste to go ahead and turn it around to make it into something positive. To go ahead and mix with probably with wood. Go ahead and make the incendiaries burn a little faster. Go ahead, you know, to start as a bible field. Something that was so small that we

started out with our farm to go ahead grow. It's still growing. And to be a part of that as well as solar, to go ahead and show that we are still trying to go ahead to prove that. We are going to be the people that's going to be in the industry that where we do care about our earth. We do care about our sky and our land, everything that we have, our animal, our plants. That's what we really care about, and that's what we want to go ahead and promote.

And this solar project is one of the biggest things that's been going on on our reservation for a long time. For us to be relying on -- you know, I really don't want to say it, but I mean, we rely on the government for so long, and for us to go ahead and just be here just trying to wait for this, you know, this so-called handouts that keep coming out, be the industry to go ahead and work with us. To show that, you know, we are going to go ahead and be more self-sustained.

We're going to go ahead and try to work more with our people, you know, just talking with the -- setting up a whole area to go ahead and be a part of solar panels that we can go ahead and

train our own people and send our own people out there. Not just -- not just tell the people of right now but also our youth. Give them that training to go ahead and be a part of this project to go ahead and see, you know, not only this solar project but, you know, this is a booming industry that's going to the whole country.

So once this is done, not only will our people benefit from it but the people that work from it will start building from the ground up to go anywhere in the world. Anywhere in the world they want to go to because we're working this in corporation with them, and they're willing to work with us very well, too.

And, you know, I'm grateful that for me to come right into this and try to go ahead and make sure I understand everything, you know, what they're talking about PV and all this stuff they're throwing at me. Yeah, I can't remember what all these words were, but now I'm starting to understand exactly what this is all about. Just go ahead and see that benefit, how it's going to go ahead and, you know, bring power to our reservation, bring jobs to our youth, and

bring, you know, all this stuff, all this -- you know, bring our industry up so that way we show that we are a force out here that -- you know, we are someone out here in the State of Nevada as well as Indian country as well as the rest of the country to; though that we are -- you know, we are proud, fighting people.

And, you know, I love my land. I love my people. I love everything about this land, and to go ahead and show that this is the project that we want to do, this is what -- how we're going to go ahead and set it up and everything that we take care of our land. We take care of our concern. We take care of species, everything else, not just our people but everything else surrounding. We want to go ahead and make sure we take care of everything here.

Like I said earlier, you know, we're going to go ahead and make sure we talk to everybody; and we want to make sure that, you know, if there's any other questions that you may have, you know, we're not here to hide anything. You're more than willing go ahead and cooperate with anybody out here. It doesn't matter. You know, whatever comments that you may have, this

is something that we're here to work with you as well as, you know, our own people here.

And thank you very much for coming out here this evening. And, again, I wanted to go ahead and thank you Leroy Spotted Eagle for coming out here and giving this blessing out here today. And everybody out here this K Road that's been working with us so very well.

You know, I'm glad to see Amy working with us very well on this project too. But you know, to go ahead and see all of us out there, you know, just having a good time, making -- you know, moving forward with this project. You know, it's -- you know, it's really exciting. I'm glad to be a part of it. I'm glad to be able to go ahead and enjoy the rest of the evening.

Thank you very much.

(Audience applaud.)

MS. YOUNGBEAR: Good Evening, everyone. My name is Kellie Youngbear. I'm the superintendent of Public Paiute Agency. I'm just going to read this paragraph from the Notice of Intent that went out on the purpose of what we do.

The proposed federal action is the BIA

approval of the solar energy ground lease and associated (inaudible) entered into by the Moapa Valley Paiute with K Road and associated approval of right of ways and easements for K Road construction is generated a solar facility with the potential to produce up to 350 megawatts.

So the purpose of that is our purpose is is that we would sign the lease which is proposed up to 30 years, and today is the Environmental Impact Statement to gather information for that project.

I would like to introduce the staff from our agency. Mr. Paul Slapley, he is the natural resource specialist. And Mr. Michael Haller, he's our realty specialist.

It's an honor to be here, and it's an honor to work on this project with you, and thank you.

I'd like to introduce Amy Heuslein from the western region office.

MS. HEUSLEIN: Good evening everyone. My name is Amy Heuslein. I'm with the Bureau of Indian Affairs, Western Regional Office of Phoenix, Arizona. I am the regional environmental protection officer for the BIA, and

our regional office covers around 42 Indian reservations in a six-state region. Our main tribal lands are in Arizona, Nevada, and Utah; but we do have some overlap tribal lands along Colorado River into California and Idaho and Oregon. So we've got quite a large regional area.

As Kellie was saying, she works with our Southern Paiute agency out of St. George. She handles mainly the tribes. Some of them here in the southern part of Nevada and also into Northern Arizona and into Utah. That is her area and her responsibility.

I'd also like to introduce some staff that came along with me from Phoenix, also, and is helping us out -- Gary Cantley, who is the regional archaeologist also in Phoenix. We also have Tamara Dawes. She's a realty specialist with our office down in Phoenix also. And then we also have Alan Gross.

Alan is Hallock & Gross. He's an environmental consultant assisting the BIA with documentation along with our Malcolm Pirnie and ARCADIS, which Chad Martin is back there at the table helping us with the documentation.

I want to give you a little background as far as why we're here and why we're doing this project.

This is a public scoping meeting. The purpose of public scoping meeting is to try to gather input and solicit comments from the public regarding the proposal that we're talking about tonight.

As you can see around the room, we have different posters talking about the project. We will give you a little more background also. But I really wanted to speak to you all about the Environmental Impact Statement process and what that actually means.

If you can follow along with the overhead here, PowerPoint, this actual environmental review process starts with a law that's called the "National Environmental Policy Act," what we call NEPA. And NEPA was signed into law by congress back in 1969. It was 42 years ago. And actually President Nixon actually signed it officially into law 1970. So it's a pretty long-lived act. It has not been amended more than, you know, one or two times; and that's it. And it really hasn't changed

that.

There are regulations that go along with that law, and the regulations are under 40 CFR 1500 and 1508. And then after the regulations comes the Department of Interior or other departments implementing procedures, and it's from there each of the bureaus within that department within the federal government does their own guidance or policies regarding the laws.

So we got a process that we're going to be going through here to prepare this Environmental Impact Statement or EIS -- we use a lot of acronyms, by the way. Bear with me if I throw a couple out to you -- but in order to make the decisions down the road regarding the lease that Ms. Youngbear was talking about as far as BIA approving that.

So how did we start this process? Well, you know we had some discussions with the developer component or what we call the "external applicant," K Road, and also the tribe coming forward saying that we're interested in this type of project that they're developing and working on a draft lease.

And so this is a trigger for the BIA to look at. Okay. This is on Indian land. So we need to take a look at what kind of compliance needs to be accomplished. We have to start the process somehow and the guidelines. The regulations tell us how to -- how we do that.

And so the first thing we do is to submit what we call a Notice of Intent to the official Federal Register. And that Federal Register notice was published on February 4, 2011. And then we are supposed to be conducing public scoping meetings, and this is our first one tonight, and obviously we decided to do it here on tribal land because this project is on tribal land. We'll also be having a scoping meeting in Las Vegas tomorrow night at the BLM, Bureau of Land Management office. We usually go to the next larger city or town that we think may have an interest in our project; so we decided to hold two public scoping meetings. And that's where we are right now in the process.

Next, which is what we call Phase 1. What will happen after that, we'll go ahead and, after we have a scoping meeting and gather input and comments that might come from the public, is

we'll be preparing a scoping report which will detail meetings that we had tonight and tomorrow night and any comments that might come into BIA.

After that we get into Phase 2, and that's the development of a draft EIS, and that draft Environmental Impact Statement is what will be appearing out in the public after we've gone ahead and gathered data, analyzed data, analyzed opposed action, which is the approval of this lease and the design of this particular project and any infrastructure that goes along with it.

Looking at alternatives -- there may be some alternatives out there. And then we also have to look at what we call a "no action alternative."

A no action alternative is basically the BIA will not approve the lease or any other subsequent action that goes along with that. That's required by law that we have to look at that particular alternative.

The draft EIS will go out for public review, and again, we have a minimum of 45-day public review. And that's the Department of Interior time frame for the public to review this document. Some agencies could make that longer,

we used to have 60 days, but it was cut back based on the counseling environmental quality regulation.

So once that public comment period comes, we'll probably be out here again having a public meeting to gather more information after you all get a chance to take a look at the document and review it and see what's in it and give us comments regarding that particular project.

After that we will go back and gather and look at all the comments and try to answer the comments as best we can and the final EIS. That final EIS or Environmental Impact Statement we'll go back out for public comments to speak. It's a 30-day period we have to have that out, and then, after that is done, we'll make a decision on the document if we would like the proposed action; and that's what we'll go through with. We call that a record of decision. So that's our decision document on the environmental process.

Now, as part of this process, we're going to be running parallel with several other federal laws and regulations. One has to deal

with the Endangered Species Act; one has to deal with the National Historic Preservation Act Cultural Resources. Those two laws will be paralleling this legal process with the BIA.

When we come back to begin to direct the decision, we hope all consultations will be done appropriately with the appropriate agencies.

So hopefully this will get to a good decision based on all the information we gathered and analyzed. And then after that, we'll make a decision on the lease itself for any rights of way for access roads or lines or whatever that might be. That is part of the project also.

One thing I did not mention here is we do have what we call "cooperating agencies" in this process. We do have, I believe, three on board; and they are the Environmental Protection Agency, the Bureau of Land Management, and the U.S. Army Corps of Engineers. The U.S. Fishing and Wildlife service is interested and is going to be assisting us, but they're not officially coming on board as a cooperating agency. And, of course, the tribe or the Moapa Band of Paiute Indians is already officially a cooperating agency because this is their land. You know,

it's their decision on whether they want to go forward with this project.

Okay. I just told you about kind of what the process was and the different steps we go through, Phase 1, 2, and 3. This is somewhat of our anticipated schedule. Hopefully it's not in stone because there may be some changes, but this is what we're anticipating getting through the process.

Some people out there might say, "Wow that is an accelerated process for EIS."

And, yes, it is. But we're going to make an effort to try to get through this process. We got a lot of resources that are being put forward to it, and we feel that this project we can get through it hopefully on a good schedule, and this is what we anticipate right now.

So basically we're in the February time frame of Phase 1. Phase 2, we hope to have the draft EIS out, summer, you know, July time frame. And then by October having the final EIS done and then the decision made late November, early December for it to go forward.

How can you participate? Well, there

is a variety of different ways in this process, and you can either do three different -- three or four different ways. You can submit your comments verbally at the end of this presentation after we all speak, oral comments. You could also submit comments on the comment card that were at the sign-in when you signed in, and you can leave them behind, or you can mail them in.

Of course, you can go up here to our court reporter and sign in with her and just sit and talk with her and leave your comments if you don't want to talk to the rest us. That's fine too. Or you can submit the comments via our project Web site that we've established, and that project Web site is at the bottom of the PowerPoint here. I think there is other material that also has that information available if you rather go to the Web site to submit comments.

So there is, you know, at least four different ways to submit your comments here tonight, and I think that's all I have.

I'm going to turn this over now to Chad Martin. Chad is working with K Road and the BIA to develop the EIS. So Chad Martin.

MR. MARTIN: Thank you. Again, my name

is Chad Martin. I'm with ARCADIS. We are a consulting company. We've been working with K Road since October 2010, and as Amy said, we've had an accelerated schedule, and we've been fast forward ever since.

So a couple of things I want to give you as an overview of the prospect in general why we're doing this. I know we've talked about some of it, where it's going to be on the reservation, some of the associated features. That will be part of the project and benefits.

The resource study that we've completed to date, and we've already kind of went over the schedule. I'll reiterate one more time.

So the purpose of the project is -- there's three main purposes, one is -- Number 1 is for economic development of a tribe.

We feel hopeful that over the 30 years it's going to be economic stimulus to the tribe as well as offer jobs. One of the benefits or the offshoots of the project is currently the Moapa Tribal Plaza is using diesel fuel and generators to provide electricity there. K Road is wanting to help with the tribe and build a 12 kilovolt line from tribal facility to Tribal

Plaza, which will provide good, clean energy and will allow for expansion to the Tribal Plaza in the future.

One of the secondary benefits is providing Nevada, California green energy to help their renewable energy portfolios. And we hope to do these things with minimal impact to the land and the reservations.

Around you on the sides are some of the maps that I'm going to show you. They're more blown up. They might have more details here. You're welcome to look at them after the presentation, but the red boundary that you can see on them is approximately 2,000 acres. And it basically sits right across from the Tribal Plaza on the westside of the railroad tracks up on top of the mesa. Some associated footprints would be up to 500 KV lines or 350 KV lines.

The existing lines that are out there right now, the two big ones by the towers. That will be 500 KV. That would be the maximum size that would go in.

We're looking at potentially a construction corridor of 150 maximum, 200 feet in width. But then that would shrink down to a

permanent corridor much less, maybe a hundred, 150 feet. That's going to equate to 25 to 50 acres of impact as well as a water line that will be fed directly into the operations and maintenance building and be used for maintenance of the PV solar rays that are out there.

There is an existing line that comes from the wells that is out on the reservation, and they would tap directly into that.

They're going to use PV. An example of PV -- if you don't understand what PV is, there are several different technologies out there. PV is trusted. It's proven. There's less moving parts.

K Road is looking at using single-packed tracker. What that is is your panel will only move in one direction compared to dual trackers, which might move in several directions. The less moving parts, the more reliable.

We're looking at building the project in three phases. The first phase might be 800 acres, and then 400 acres plaza, then another 400 acres. The reason for that is the off takers, Nevada Energy and those folks. If we were to build 350 all at once, they wouldn't be

able to take all of that power all at once. It's done in phase cycles to allow for that.

Another good thing about PV, there's a decrease need for water. We're going to have water at the operation and maintenance building for basic bathrooms and things of that nature and then for washing the panels. The cleaner the panels, the more efficient they are. Three to four times a year objective rate to keep it clean.

There's no greenhouse gas and emissions, and there's minimal noise as compared to some of the other technologies that we're looking at.

Reduce visual impacts, these, if you look at these pictures here -- I have some out on both sides -- there are three people standing next to them; so you can get an understanding of how big these are.

This is not necessarily exactly what will be built out there. Even in the PV world, it's a couple of different types. These are more of the long panel types, multiple poles, and the whole stack moves together. The other type might be more of a single-pole structure, smaller square, and many more of them. They will move

separately.

Regardless, they're lowered into the ground as compared to the other technologies, which could be 30 feet in the air or have 200 towers, which will be visual impact upon mesa.

So this is a typical. I wanted to show you something about the layout. If you were flying over, this is what you might see. This is not by any means what is actually planned, but this is an example.

So sitting on top of here right now within 200 -- 2,000-acre boundary are 300 megawatt panels. So they're some topology issues out there. There is a couple of the ravines that are deep, and we would not be able to put PV down inside because of shading effects. Just simply it's a ledge. So that's what you're seeing thee in those three slots.

But I would suspect that K Road is going to do everything they can to fit as many PV panels within the red line as possible. So this is just an example.

The operation and maintenance building, a substation would be there. The substation basically is going to gather all electricity from

the multiple panels and bringing them into one location and then send it out through the transmission line to the Crystal Substation.

You can also see the waterline right here. This is the existing waterline. I want to say you're -- the well, the current well is right here. And it comes into the Moapa Tribal center right here. So there is a "T."

This is going up the reservation. Over here the Crystal Substation that would be on, it would cross over a half mile of BLM land. So it's in Clark County, Nevada, 30 miles north of Las Vegas. It's wholly within the reservation, except for that half mile piece that may be on BLM land where it connects to Crystal Substation.

Kind of talked about the corridors. We're looking at two different access areas. We're currently doing traffic studies. We're looking at railroad crossings and bridges, and so there's two entrances. One is off Exit 63 right in here. And there's an access road that runs up to the Crystal Substation that's paved and approved.

We would come in here and continue that road up into the reservation, and it's an

existing road where the two 500 KV lines are existing. We will improve that road a little bit more. There's pretty bad humps and bumps and extend that road up to the mesa, and we're still looking at how exactly to do that if we chose that option.

The other option is Exit 80. That's the exit that goes directly to the reservation. There is a railroad crossing right in there. And that's another issue, the best way to get across that and safest way. We also would like to talk to the railroad about potentially bringing in supplies via the rail, which will decrease large truck traffic and folks exiting the interstate at either one of these.

So this is the USGS topological map. It doesn't look too bad here, but the reason for this shape is that is the shape of the mesa. It goes up to this wash right here, and it's elevated, as all of you know looking from the Tribal Plaza, 30, 40 feet. The transmission line it's about seven miles long. The waterline that I pointed out and the two access roads coming into the site. This is just an aerial view. Kind of highlighted the washes, the ravines that

were in here. You can see he Crystal Substation here.

So the associated features are the transmission line, the waterline, the substation, and operation and maintenance building. At that building, we'll most likely have some type of septic system for the bathrooms and washrooms, and then the access roads, we'll most likely narrow that down to one access road using the EIS process to help determine which one is best.

The impacted resources, we started these studies in October, the second week of October. And the first thing that we completed were the desert tortoise surveys. We use the U.S. Fish and Wildlife protocol. That's basically a bunch of bodies 30 feet apart walking parallel transits back and forth looking for tortoises and signs of tortoises burrows, scutes, shells. We walked 305 transects over 500 miles, and we did find a few. We found 26 adults and a total of about 40 tortoises and over 500 burrows on the site.

We're currently writing a biological assessment. It's about 90 percent complete. Upon completion of that, BIA will weigh in heavily on that, and then it will eventually

start a formal session consultation with the Fish and Wildlife Services.

During the surveys, we also completed cacti inventory. We GPS'd over 6,000 cacti. I think there were probably seven or eight species. We have a nice map with a lot of dots.

The idea there is we want to decrease impact on the natural resources, vegetation being one. Any cacti that we would be impacted during the project would be relocated most likely within the reservation, minimizing or mitigating that loss.

Through our talks here lately with the Bureau of Land Management and the BIA, there is some new legislation coming out and an Indian protection plan would be created. It serves two purposes. One, you have Bald and Golden Eagle regulations out there that Fish and Wildlife has concern for; so we'll probably complete Avian rapture study within a ten-mile radius to make sure we have no impact to Golden and Bald Eagles. And ravens are a big issue when we are talking about desert tortoises. They're a predator on young desert tortoise. We want to make sure that what we're building is not going to increase

impact to the desert tortoise as a result.

Cultural resource surveys were completed in December. We consulted with the tribe's cultural resource committee and had a couple or one of those folks. They looked over a thousand acres of new land and used literature review and some of the older studies to cover the remaining land.

One bottle was found. If I recall correctly, it was a wine bottle from the 1970s. And that report has been sent to the BIA. The BIA is currently going through Section 7 consultation with the Nevada State Historic Reservation office.

UNKNOWN SPEAKER: Are all of these completed?

MR. MARTIN: Yes.

So here's the schedule again. We're currently here at the scoping meetings. We'll be moving into preparing and submitting the draft Environmental Impact Statement for BIA review as well as coordinating agencies. Then we'll hold a public meeting in summer, prepare a final EIS, and hopefully get a BIA decision on land lease at the end of the year and start construction before

2012.

Comments. Again, I want to reiterate there are comment cards on the back table. You can leave them with us. There is an address on the comment card. You can mail it if you feel better about that. You can speak directly to the court reporter. There's a link on the project Web site that you can leave a comment there. All comments will require a name so we can record it correctly. And we'll start the comment period now.

If you don't mind, if you have a comment, would you please raise your hand and state your name before you make your comment or ask your question, and we'll be glad to answer anything that we can.

COMMENT SESSION

(No comments made.)

MR. MARTIN: We will be here till 8 o'clock. Scott Walker in the blue shirt is here. He works on my staff. He can answer any questions you have. We'll be standing by some of the signs and posters, and if you have questions

or if you want to ask us, we'll be happy to answer anything that we can.

Thank you all, again, for coming out.

(The proceedings concluded.)

***

I, the undersigned, a Certified Court Reporter of the State of Nevada, do hereby certify,

That the foregoing proceedings were taken before me at the time and place herein set forth;

That any witnesses in the foregoing proceedings, prior to testifying, were duly sworn;

That a record of the proceedings was made by me using machine shorthand which was thereafter transcribed under my direction;

That the foregoing transcript is a true record of the testimony given.

Further, that before completion of the proceedings, review of the transcript [ ] was [X] was not requested.

I further certify I am neither financially interested in the action nor a relative or employee of any attorney or party to this action.

IN WITNESS WHEREOF, I have this date subscribed my name:

Dated: 3/8/2011

Kimberly M. Lowe
CCR No. 849

A

able 10:15 24:1 25:15
accelerated 19:11 21:4
access 18:12 26:17,21 27:23 28:8,9
accomplished 15:4
acres 22:14 23:3,22,22,23 30:6
acronyms 14:14
act 13:19,23 18:1,2
action 10:25 16:9,14,16,18 17:19 33:18,19
actual 13:16
address 31:4
adults 28:20
advantage 5:6
aerial 27:24
Affairs 1:2 11:23
agencies 16:25 18:7,15 30:22
agency 5:22 10:21 11:13 12:9 18:18,22,25
ago 13:21
ahead 2:8,11,12 3:3,4,7,13 3:18,19,25 4:3,8,10 4:14,17,24 5:1,6,7 5:10,11,20,22,25 6:5,7,8,9,14,15,18 6:20,22,23,24 7:1,3 7:4,10,16,19,20,22 7:24,25 8:4,5,17,23 8:24 9:10,12,16,19 9:23 10:5,11,16 15:23 16:8
air 25:4
Alan 12:20,21
allow 22:2 24:2
alternative 16:15,16,20
alternatives 16:12,13
amended 13:24
Amy 5:19 10:9 11:19,22 21:3
analyzed 16:8,8 18:10
Anderson 2:7,9 3:2
animal 7:8
answer 17:12 31:15,23 32:2
anticipate 19:17
anticipated 19:6
anticipating 19:8
anybody 6:4 9:24
apart 28:16
appearing 16:7
applaud 10:18
applicant 14:22
appropriate 18:7
appropriately 18:7
approval 11:1,3 16:9
approve 16:17
approved 26:23
approving 14:18
approximately 22:14
ARCADIS 12:24 21:1
archaeologist 12:17
area 5:5 7:24 12:7,12
areas 26:17
Arizona 11:24 12:3,12
Army 18:19
asked 2:18
assessment 28:23
assisting 12:22 18:21
associated 11:2,3 21:10 22:17 28:3
attend 4:7
attorney 33:19
Audience 10:18
available 3:16 20:17
Avian 29:19

B

back 12:24 13:20 17:1,11 17:15 18:5 28:17 31:3
backdoor 6:2
background 13:1,11
bad 27:3,17
Bald 29:17,21
Band 1:15 18:23
based 17:2 18:9
basic 24:6
basically 16:16 19:19 22:15 25:25 28:15
bathrooms 24:6 28:7
bear 2:21 14:14
believe 18:16
benefit 8:10,23
benefits 21:11,20 22:4
best 17:13 27:10 28:10
better 31:6
BIA 10:25 11:25 12:22 14:18 15:1 16:3,17 18:4 20:24 28:24 29:14 30:11,12,21 30:24
bible 6:25
big 22:20 24:18 29:22
biggest 7:12
biological 28:22
bit 27:2
blessing 2:13,19 10:6
BLM 1:7 4:6 15:16 26:11 26:15
blown 22:11
blue 31:22
board 18:17,22
bodies 28:16
booming 8:7
bottle 30:9,10
bottom 20:15
boundary 22:13 25:12
bridges 26:19
bring 6:9 8:24,25 9:1,2
bringing 26:1 27:12
brought 6:8
build 21:24 23:25
building 8:11 23:5,20 24:5 25:23 28:5,6 29:25
built 24:20
bumps 27:3
bunch 28:15
burden 5:8
Bureau 1:2 11:22 15:17 18:18 29:14
bureaus 14:7
burn 6:23
burrows 28:18,21

C

C 2:4
cacti 29:4,4,9
California 12:5 22:5
call 13:19 14:21 15:8,22 16:14 17:20 18:15
called 13:18
Cantley 12:16
card 20:6 31:5
cards 31:3
care 7:6,7,9 9:13,13,14 9:17
cause 3:13
CCR 1:22 33:25
center 26:7
Certified 33:1
certify 33:3,17
CFR 14:3
Chad 12:24 20:23,23,24 21:1
chairman 2:7,9 3:2,7
chance 17:7

changed 13:25
changes 19:7
children 3:19
chose 27:5
city 15:18
Clark 1:17 4:22 26:12
clean 22:1 24:10
cleaner 24:7
Club 4:5
Colorado 12:5
come 2:18 3:15,21,25 4:8 4:24 8:17 15:25 16:3 18:5 26:24
comes 14:5 17:5 23:7 26:7
coming 3:6 7:18 10:3,6 14:22 18:22 27:23 29:15 32:3
comment 6:8 17:4 20:6 31:3,5 31:8,10,13,14,18
comments 6:6 9:25 13:6 15:25 16:3 17:9,12,13,15 20:4,5,6,11,13,18 20:20 31:2,9,19
committee 30:4
company 21:2
compared 23:17 24:12 25:3
complete 28:23 29:19
completed 21:12 28:13 29:3 30:2,16
completion 28:24 33:14
compliance 15:3
component 14:21
concern 9:14 29:19
concluded 32:4
conducing 15:11
congress 13:20
connects 26:15
consideration 6:7
construction 11:5 22:24 30:25
consultant 12:22
consultation 29:1 30:13
consultations 18:6
consulted 30:3
consulting 21:2
continue 26:24
cooperate 9:23
cooperating 18:15,22,24
cooperation 5:14
coordinating 30:22
corporation 8:14
Corps 18:19
correctly 30:10 31:10
corridor 5:4 22:24 23:1
corridors 26:16
counseling 17:2
country 8:8 9:5,6
County 1:17 4:22 26:12
couple 14:15 21:6 24:21 25:14 30:4
course 18:23 20:9
court 20:10 31:7 33:1
cover 30:7
covers 12:1
created 29:16
creator 2:22
cross 26:11
crossing 27:9
crossings 26:19
Crystal 26:3,10,15,22 28:1
cultural 18:3 30:2,4
current 26:6
currently 21:21 26:18 28:22 30:12,19
cut 17:1
cycles 24:2

D

D 2:4
data 16:8,8
date 21:13 33:20
Dated 33:23
Dawes 12:18
days 17:1
deal 6:2 17:25 18:1
December 19:24 30:3
decided 15:13,19
decision 17:18,20,21 18:6,9 18:11 19:1,23 30:24
decisions 14:16
decrease 24:4 27:13 29:7
deep 25:15
department 1:1 14:5,8 16:23
departments 14:6
desert 28:14 29:23,24 30:1
design 16:10
detail 16:2
details 22:11
determine 28:10
develop 20:24
developer 14:21
developing 14:24
development 16:5 21:17
developments 3:12
diesel 21:22
different 13:10 19:4 20:1,2,3 20:20 23:12 24:21 26:17
diligently 5:16
direct 18:5
direction 23:17 33:11
directions 23:18
directly 23:4,9 27:8 31:6
discussions 14:20
document 16:25 17:8,18,21
documentation 12:23,25
doing 4:12 5:10 13:2 21:8 26:18
dots 29:6
draft 14:25 16:5,6,21 19:21 30:20
dual 23:17
duly 33:7
dusty 3:22

E

E 2:4,4
Eagle 2:12,15,16 10:5 29:17
Eagles 29:21
earlier 9:18
early 19:23
earth 4:13,15 7:6
easements 11:4
economic 21:17,19
effects 25:16
efficient 24:8
effort 19:13
eight 29:5
EIS 14:13 16:5,21 17:13 17:14 19:11,21,22 20:24 28:9 30:23
either 20:2 27:15
electricity 21:23 25:25
elevated 27:20
emissions 24:11
employee 33:19
Endangered 18:1
energies 3:19
energy 11:1 22:1,5,6 23:24
Engineers 18:19
enjoy 10:16

enjoyed 3:24
entered 11:2
entity 4:21
entrances 26:20
environmental 1:14 11:9,25 12:22 13:13,17,18 14:13 16:6 17:2,14,21 18:17 30:21
equate 23:2
erosion 3:13
established 20:14
evening 10:4,16,19 11:21
eventually 28:25
everybody 4:6 5:2,15,23 6:4 9:20 10:7
exactly 8:22 24:19 27:5
example 5:18 6:16 23:10 25:10,22
exciting 10:14
existing 22:19 23:7 26:5 27:1 27:2
exit 26:20 27:7,8
exiting 27:14
expansion 22:2
extend 27:4
external 14:21

F

facility 1:16 11:5 21:25
far 13:2 14:17
farm 7:1
fast 21:4
faster 6:24
features 21:10 28:3
February 1:19 2:1 15:10 19:19
fed 23:4
federal 10:25 14:8 15:9,9 17:25
feel 3:8 19:15 21:18 31:5
feet 22:24 23:2 25:4 27:21 28:16
field 6:25
fighting 9:7
final 17:13,14 19:22 30:23
finally 5:6
financially 33:17
find 28:19
fine 20:12
first 15:7,12 23:21 28:13
Fish 4:5 28:14 29:2,18
Fishing 18:19
fit 25:20
flying 25:8
folks 23:24 27:14 30:5
follow 13:15
footprints 22:17
force 5:11 9:3
forefront 6:13
foregoing 33:4,6,12
formal 29:1
forth 28:17 33:5
forward 6:9 10:13 14:23 19:2 19:15,24 21:5
found 28:20 30:9
four 20:3,19 24:9
frame 16:24 19:20,21
front 6:14
fuel 21:22
full 4:2 5:14 6:7
further 33:14,17
future 3:14 22:3

G

G 2:4
Gary 12:16
gas 24:11
gather 11:10 13:6 15:24 17:6,11 25:25
gathered 16:8 18:9
general 21:7
generated 11:5
generators 21:23
George 12:9
getting 19:8
give 2:13 8:3 13:1,11 17:9 21:6
given 33:13
giving 10:6
glad 3:21 4:7 10:9,15,15 31:15
go 2:8,11,12 3:4,7,13 3:17,19,25 4:3,8,9 4:10,14,24 5:1,6,7 5:10,11,20,21,25 6:5,7,8,9,14,15,16 6:18,20,22,23,24 7:1,3,4,10,16,19,20 7:22,24,25 8:4,5,12 8:13,17,23,24 9:10 9:12,16,19,23 10:4 10:11,16 14:2 15:17,23 16:21 17:11,15,19 19:1,5 19:24 20:9,18 22:22
goes 16:11,18 27:8,19
going 2:7,11,12,21 3:3,9 3:12,17 5:1,9,11,12 6:1,11 7:4,5,12,20 7:22 8:7,24 9:12,19 10:22 14:11,12 17:24 18:20 19:12 20:22 21:9,19 22:10 23:2,10 24:4 25:19,25 26:9 29:25 30:12
Golden 29:17,21
good 2:24 3:9 10:12,19 11:21 18:8 19:16 22:1 24:3
government 7:15 14:8
GPS'd 29:4
grateful 8:16
green 6:16 22:5
greenhouse 24:11
Gross 12:20,21
ground 8:11 11:1 25:3
grow 7:1
growing 7:2
guidance 4:16 14:9
guidelines 15:5

H

half 26:11,14
Haller 11:14
Hallock 12:21
hand 31:13
handles 12:10
handouts 7:18
happen 15:23
happy 32:1
hard 5:16
hear 3:5
heart 3:4
heavily 28:25
help 21:24 22:5 28:10
helping 12:16,25
Heuslein 11:19,21,22
hey 6:1
hide 5:25 9:22
highlighted 27:25
Historic 18:2 30:13
hold 15:20 30:22
honor 11:16,17
hope 18:6 19:20 22:6
hopeful 21:18
hopefully 18:8 19:6,16 30:24
humps 27:3
hundred 23:1

I

Idaho 12:5

idea
29:7
impact
1:14 11:10 13:13 14:13 16:6 17:14 22:7 23:3 25:5 29:8,21 30:1,21
impacted
28:11 29:9
impacts
24:14
implementing
14:6
improve
5:12 27:2
inaudible
11:2
incendiaries
6:23
increase
29:25
Indian
1:2 6:12 9:5 11:23 12:1 15:2 29:15
Indians
1:16 18:24
industry
5:1 7:6,19 8:7 9:2
information
11:10 17:6 18:9 20:17
infrastructure
16:11
input
13:6 15:24
inside
25:16
Intent
10:23 15:8
interest
15:19
interested
14:23 18:20 33:18
Interior
1:1 14:5 16:24
interstate
27:14
introduce
2:8,11 11:12,19 12:14
inventory
29:4
issue
27:10 29:22
issues
25:13

J

Job
1:23
jobs
8:25 21:20
July
19:21

K

K
1:15 10:7 11:3,4 14:22 20:23 21:3 21:23 23:15 25:19
keep
7:18 24:9
Kellie
10:20 12:8
kilovolt
21:25
Kimberly
1:21 33:24
kind
15:3 19:3 21:13 26:16 27:25
know
3:3,8,23 4:4,4,5,7,12 4:13,16,20 5:3,7,18 5:18,20,23,25 6:1,3 6:17,19,20,24 7:14 7:17,20,23 8:5,6,16 8:18,24 9:1,2,3,6,8 9:18,21,22,25 10:2 10:9,11,12,13,14 10:14 13:24 14:20 18:25 19:21 20:19 21:8 27:20
KV
22:18,18,21 27:1

L

land
3:13 5:8 7:7 9:8,9,13 15:2,14,15,17 18:18,25 22:8 26:11,15 29:14 30:6,8,24
lands
12:3,4
large
12:6 27:13
larger
15:18
largest
6:11
Las
1:18 2:1 15:16 26:13
late
19:23
lately
29:13
law
13:17,20,22 14:3 16:19
laws
14:10 17:25 18:3
layout
25:7
leaders
2:17
lease
11:1,8 14:16,25 16:10,17 18:11 30:24
leave
20:8,11 31:4,8
ledge
25:17
legal
18:4
legislation
29:15
Leroy
2:12,14,16 3:3 4:17 10:5
line
21:25 23:3,7 25:21 26:3 27:21 28:4
lines
18:12 22:18,18,19 27:1
link
31:7
literature
30:6
little
3:22 6:24 13:1,11 27:2
location
26:2
long
5:5 7:13,16 24:22 27:22
longer
16:25
long-lived
13:23
look
15:2,3 16:14,19 17:7 17:12 22:12 24:15 27:17
looked
30:5
looking
16:12 22:23 23:15 23:20 24:13 26:17 26:19 27:5,20 28:17
loss
29:12
lot
4:19,19 14:14 19:14 29:6
love
9:8,8,9
Lowe
1:21 33:24
lowered
25:2

M

M
1:21 33:24
machine
33:10
mail
20:8 31:5
main
12:2 21:16
maintenance
23:5,5 24:5 25:23 28:5
making
10:12
Malcolm
12:23
Management
15:17 18:18 29:14
map
27:16 29:6
maps
22:10
Martin
12:24 20:23,24,25 21:1 30:17 31:21
material
20:16
matter
9:24
maximum
22:21,24
mean
7:15
means
13:14 25:9
meeting
1:7,14 2:13,19 6:6 13:4,5 15:16,24 17:6 30:23
meetings
15:12,20 16:2 30:19
megawatt
25:13
megawatts
11:6
mention
18:14
mesa
22:17 25:5 27:4,18
Michael
11:14
mile
26:11,14
miles
26:12 27:22 28:19
mind
2:14 31:12
minimal
22:7 24:12
minimizing
29:11
minimum
16:22
mitigating
29:11
mix
6:22
Moapa
11:2 18:23 21:22 26:7
mother
4:13,15
move
23:17,18 24:25
moves
24:23
moving
10:13 23:13,19 30:20
multiple
24:22 26:1
multi-facility
6:18

N

N
2:4
name
2:9,16 10:20 11:22 20:25 31:9,14 33:21
narrow
28:9
nation
2:18 6:12

National 13:18 18:2
natural 11:13 29:8
nature 24:6
necessarily 24:19
need 3:4 15:3 24:4
needs 15:4
neither 33:17
NEPA 1:14 13:19,19
Nevada 1:17,18 2:1 4:22 5:13 9:4 12:3,11 22:5 23:24 26:12 30:13 33:2
new 29:15 30:6
nice 29:6
night 15:16 16:3
Nixon 13:21
noise 24:12
north 26:12
Northern 12:12
notice 10:22 15:8,10
November 19:23
Number 21:16

O

O 2:4
objective 24:9
obviously 15:13
October 19:22 21:3 28:12,12
offer 2:18,23 21:20
office 11:20,23 12:1,19 15:17 30:14
officer 11:25
official 15:9
officially 13:22 18:21,24
offshoots 21:21
Okay 15:2 19:3
older 30:7
once 8:9 17:4 23:25 24:1
ones 22:20
oOo 2:5
operation 24:5 25:23 28:5
operations 23:4
opposed 16:9
option 27:6,7
oral 20:5
order 14:15
Oregon 12:6
overhead 13:16
overlap 12:4
overview 21:7
o'clock 31:22

P

P 2:4
page 5:24
Paiute 1:16 2:10,18 10:21 11:3 12:9 18:23
panel 23:16 24:22
panels 7:25 24:7,8 25:13,21 26:1
paragraph 10:22
parallel 17:24 28:16
paralleling 18:4
part 3:7 4:10,11,15,25 7:2,25 8:4 10:15 12:11 17:23 18:13 21:11
participate 19:25
particular 16:10,20 17:9
parts 23:14,19
party 33:19
Paul 11:13
paved 26:22
people 3:17 4:1,6 6:15 7:5 7:23 8:1,1,2,10,10 9:7,9,15 10:2 19:10 24:16
percent 28:23
period 17:4,16 31:10
permanent 23:1
phase 15:22 16:4 19:5,20 19:20 23:21 24:2
phases 23:21
Phoenix 11:24 12:15,17,19
PHOTOVOLTAIC 1:16
physically 4:8
pictures 24:15
piece 26:14
Pirnie 12:23
place 33:5
plan 29:16
planned 25:9
plants 6:12 7:8
plaza 21:22 22:1,2,15 23:22 27:21
please 31:13
pointed 27:23
poles 24:22
policies 14:9
Policy 13:18
portfolios 22:6
positive 5:9,10 6:22
possible 25:21
posters 13:10 31:25
potential 11:6
potentially 22:23 27:12
power 4:25 8:24 24:1
PowerPoint 13:16 20:16
pray 2:24
prayer 2:23 3:1
predator 29:23
prepare 14:12 30:23
preparing 16:1 30:20
presentation 20:4 22:13
Preservation 18:2
President 13:21
pretty 13:23 27:3
pride 4:18,19
prior 33:7
probably 6:22 17:5 29:5,19
problems 3:14
procedures 14:6
proceedings 32:4 33:4,7,9,15
process 13:13,17 14:11,19 15:5,21 17:22,23 18:4,16 19:4,9,11 19:14 20:1 28:10
produce 11:6
project 3:8,10,10,15 4:11 7:11 8:5,6 9:10 10:10,13 11:11,17 13:3,10 14:24 15:14,19 16:10 17:10 18:13 19:2 19:16 20:14,15 21:11,15,21 23:20 29:10 31:7
projects 3:11
promote 7:10
proposal 13:7
proposed 1:15 10:25 11:8 17:19
prospect 21:7
protection 11:25 18:17 29:16
protocol 28:15
proud 9:7
prove 7:4
proven 23:13
provide 21:23 22:1
providing 22:5
public 10:21 13:4,5,6 15:12 15:20,25 16:7,21 16:23,24 17:4,6,15 30:23
published 15:10
purpose 10:23 11:7,7 13:5 21:15

purposes
21:16 29:17
put
19:15 25:15
PV
8:19 23:6,10,11,11
23:12 24:3,20
25:15,20
P.M
2:2,2

Q

quality
17:2
question
31:15
questions
9:21 31:24,25
quite
12:6

R

R
2:4
radius
29:20
rail
27:13
railroad
22:16 26:19 27:9,12
raise
31:13
rapture
29:20
rate
24:9
ravens
29:22
ravines
25:14 27:25
rays
23:6
read
10:22
really
3:8,8 7:9,14 10:14
13:12,25
realty
11:15 12:18
reason
23:23 27:17
recall
30:9
recognize
4:23
record
17:20 31:9 33:9,13
recyclables
6:19
red
22:13 25:21
Reduce
24:14
regarding
13:7 14:9,16 17:9
Regardless
25:2
region
11:20 12:2
regional
11:23,24 12:1,6,17
Register
15:9,10
regulation
17:3
regulations
14:2,3,4 15:6 17:25
29:18
reiterate
21:14 31:2
relative
33:18
reliable
23:19
relocated
29:10
rely
7:15
relying
7:14
remaining
30:7
remember
8:20
renewable
22:6
report
16:1 30:11
Reported
1:21
reporter
20:10 31:7 33:2
representatives
3:20 4:1
requested
33:16
require
31:9
required
16:19
reservation
5:5,14 6:13 7:13
8:25 21:9 23:8
26:9,13,25 27:8
29:11 30:14
reservations
6:10 12:2 22:8
resource
11:14 21:12 30:2,4
resources
18:3 19:14 28:11
29:8
responsibility
12:13
rest
9:5 10:16 20:12
resting
3:4
result
30:1
reuse
6:20
review
13:17 16:22,23,24
17:8 30:6,21 33:15
right
6:13 8:3,17 11:4
15:21 19:17 22:15
22:20 25:11 26:4,6
26:8,20 27:9,19
rights
18:11
River
12:5
road
10:7 11:3,4 14:16,22
20:23 21:3,23
23:15 25:19 26:21
26:25 27:1,2,4 28:9
roads
18:12 27:23 28:8
ROAD/MOAPA
1:15
room
13:9
running
17:24
runs
26:21

S

S
2:4
safest
27:11
saying
3:3 12:8 14:23
schedule
19:6,17 21:4,14
30:18
scoping
1:7,14 2:13 6:6 13:4
13:5 15:12,15,20
15:24 16:1 30:19
Scott
31:22
scutes
28:18
second
28:12
secondary
22:4
Section
30:12
see
3:9,10,14,16,17,25
4:9 5:7 8:5,23 10:9
10:11 13:9 17:8
22:14 25:8 26:4
28:1
seeing
25:17
self-sustained
7:21
send
8:1 26:2
sent
30:11
separated
4:21
separately
25:1
septic
28:7
serves
29:16
service
18:20
Services
29:2
session
29:1 31:18
set
4:17 5:18 6:16 9:12
33:5
setting
7:24
seven
27:22 29:5
shading
25:16
shape
27:18,18
shells
28:18
shirt
31:22
shorthand
33:10
show
4:2,20,24 5:11 6:10
7:3,19 9:2,10 22:10
25:6
shrink
22:25
sides
22:9 24:16
Sierras
4:5
sign
11:8 20:10
signed
13:19,22 20:7
signs
28:17 31:25
sign-in
20:7
simply
25:16
single-packed
23:15
single-pole
24:24
sit
20:10
site
4:9 20:14,15,18
27:24 28:21 31:8
sits
22:15
sitting
25:11
situation
5:7
six-state
12:2
size
22:21
sky
7:7
Slapley
11:13
slots
25:18
small
6:25
smaller
24:24
solar
1:16 3:10,15 6:11

7:3,11,25 8:6 11:1 11:5 23:6
solicit 13:6
somewhat 19:5
southern 2:17 12:9,11
sovereign 4:21
so-called 7:18
speak 13:12 17:15 20:5 31:6
SPEAKER 30:15
specialist 11:14,15 12:18
species 9:14 18:1 29:5
spiritual 2:17 4:16
Spotted 2:12,15,16 10:5
square 24:25
St 12:9
stack 24:23
staff 11:12 12:14 31:23
standing 24:16 31:24
start 6:19,24 8:11 14:19 15:4 29:1 30:25 31:10
started 7:1 28:11
starting 8:21
starts 6:17 13:17
state 4:22 5:13 9:4 30:13 31:14 33:2
Statement 1:15 11:10 13:13 14:13 16:6 17:14 30:21
STATES 1:1
step 4:25
steps 19:4
stimulus 21:19
stone 19:7
structure 24:24
studies 26:18 28:12 30:7
study 21:12 29:20
stuff 8:19 9:1
submit 15:8 20:3,6,13,18,20
submitting 30:20
subscribed 33:21
subsequent 16:18
substation 25:24,24 26:3,10,15 26:22 28:1,4
summer 19:21 30:23
superintendent 10:21
supplies 27:13
support 4:2
supposed 5:21 15:11
sure 5:17,20,23 8:18 9:16 9:19,20 29:21,24
surrounding 9:16
surveys 28:14 29:3 30:2
suspect 25:19
sworn 33:8
system 28:7

T

T 26:8
table 12:25 31:3
take 4:18,19 5:6 6:7 9:13 9:13,14,17 15:3 17:7 24:1
taken 33:4
takers 23:24
talk 2:22 3:19 5:22,22 6:3 9:19 20:11,12 27:11
talked 21:8 26:16
talking 3:20,25 4:4 5:19 7:23 8:19 13:7,10 14:17 29:22
talks 29:13
Tamara 12:18
tap 23:9
tear 3:12
technologies 23:12 24:13 25:3
tell 8:2 15:6
ten-mile 29:20
testifying 33:7
testimony 33:13
thank 2:25 3:2 10:3,5,17 11:17 20:25 32:3
thee 25:17
thing 15:7 18:14 24:3 28:13
things 7:12 21:6 22:7 24:6
think 15:18 20:16,21 29:5
thousand 30:5
three 18:16 20:2,2 21:16 23:21 24:8,16 25:18
throw 14:15
throwing 8:20
till 31:21
time 7:13 10:12 16:24 19:19,21 21:14 33:5
times 13:24 24:9
today 2:13,16 3:20,21,21 6:6 10:7 11:9
told 19:3
tomorrow 15:16 16:2
tonight 2:20 13:8 15:13 16:2 20:21
top 22:16 25:11
topological 27:16
topology 25:13
tortoise 28:14 29:24 30:1
tortoises 28:17,18,21 29:23
total 28:20
towers 22:20 25:5
town 15:18
tracker 23:16
trackers 23:17
tracks 22:16
traffic 26:18 27:14
train 8:1
training 8:4
transcribed 33:11
transcript 33:12,15
transects 28:19
transits 28:16
transmission 26:3 27:21 28:4
tribal 3:6 12:3,4 15:14,15 21:22,25,25 22:2 22:15 26:7 27:21
tribe 4:15 14:22 18:23 21:17,19,24
tribes 12:10
tribe's 30:3
trigger 15:1
truck 27:14
true 33:12
trusted 23:13
try 7:22 8:17 13:5 17:12 19:13
trying 4:14 6:15,18,19 7:4 7:17
turn 6:21 20:22
two 13:24 15:20 18:3 22:20 26:17,20 27:1,23 29:16
type 14:23 24:23 28:6
types 24:21,22
typical 25:6

U

undersigned 33:1
understand 4:12 8:18,22 23:11
understanding 24:17
UNITED 1:1
UNKNOWN 30:15
use 14:13 23:10 28:14
USGS 27:16
usually 15:17
Utah

12:3,12
U.S
18:19,19 28:14

V

Valley
11:3
variety
20:1
Vegas
1:18 2:1 15:16 26:13
vegetation
29:8
verbally
20:4
view
27:24
visual
24:14 25:5

W

wait
7:17
walked
28:18
Walker
31:22
walking
28:16
want
2:23 4:3 5:17,17,20 5:21 7:10,14 8:13 9:11,16,20 13:1 19:1 20:12 21:6 26:5 29:7,24 31:2 32:1
wanted
10:4 13:12 25:6
wanting
21:24
wash
27:19
washes
27:25
washing
24:7
washrooms
28:7
waste
6:20
water
23:3 24:4,5
waterline
26:4,5 27:22 28:4
way
2:23,24 4:16 9:2 14:14 18:12 27:10 27:11
ways
11:4 20:1,3,20
Web
20:14,15,18 31:8
Wednesday
1:19 2:1
week
28:12
weigh
28:24
welcome
2:7,15 22:12
wells
23:8
went
4:17 10:23 21:13
western
11:20,23
westside
22:16
we'll
6:6 15:15,23 16:1 17:5,15,17,19 18:10 28:6,8 29:19 30:19,22 31:10,15 31:24 32:1
we're
4:12,14 5:1,9,9,11 5:21,24,24 6:1,3,15 6:18 7:22 8:13 9:11,18,22 10:1 13:2,2,7 14:11,23 17:23 19:8,12,19 21:8 22:23 23:20 24:4,13 26:17,18 26:18 27:4 28:22 29:25 30:18
we've
5:15 12:6 16:7 20:14 21:2,3,4,8,12,13
WHEREOF
33:20
wholly
26:13
width
22:25
Wildlife
4:6 18:20 28:15 29:2 29:18
William
2:9
willing
6:3,5 8:14 9:23
wine
30:10
WITNESS
33:20
witnesses
33:6
wood
6:23
words
8:21
work
3:18 4:14 7:19,22 8:10,15 10:1 11:17
working
5:2,15,16 8:13 10:8 10:9 14:24 20:23 21:2
works
12:8 31:23
world
8:12,12 24:20
wouldn't
23:25
Wow
19:10
writing
28:22

X

X
33:15

Y

Yeah
8:20
year
24:9 30:25
years
11:9 13:21 21:18
young
29:24
Youngbear
10:19,20 14:17
youth
8:3,25

1

1
15:22 19:5,20 21:16
12
21:24
150
22:24 23:2
1500
14:4
1508
14:4
156941
1:23
1969
13:20
1970
13:22
1970s
30:10

2

2
16:4 19:5,20
2,000
22:14
2,000-acre
25:12
200
22:24 25:4,12
2010
21:3
2011
1:19 2:1 15:11
2012
31:1
23
1:19 2:1
25
23:2
26
28:20

3

3
19:5
3/8/2011
33:23
30
11:9 21:18 25:4 26:12 27:21 28:16
30-day
17:16
300
25:12
305
28:18
350
11:6 22:18 23:25

4

4
15:10
40
14:3 27:21 28:20
400
23:22,23
42
12:1 13:21
45-day
16:22

5

50
23:3
500
22:18,21 27:1 28:19 28:21

6

6,000
29:4
6:16
2:2
60
17:1
63
26:20

7

7
30:12
7:00
2:2

8

8
31:22
80
27:7
800
23:22
849
1:22 33:25

9

90
28:23

This page intended to be blank.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

THE BLM SCOPING MEETING

THE SCOPING MEETING FOR NEPA ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED K ROAD/MOAPA BAND OF PAIUTE INDIANS PHOTOVOLTAIC SOLAR FACILITY, CLARK COUNTY, NEVADA

Las Vegas, Nevada

Thursday, February 24, 2011

Reported by:
Kimberly M. Lowe
CCR No. 849
Job No. 156942

LAS VEGAS, NEVADA, THURSDAY, FEBRUARY 24, 2011

PROCEEDINGS

-oOo-

CHAIRMAN ANDERSON: Well, I want to go ahead and introduce myself.

My name is William Anderson. I'm the chairman for Moapa Band of Paiute. We were going to have an opening prayer, but the way things are going, I'm just going to go ahead and make my introduction and make my speech right now to tell you the importance of this.

When I came to this project just recently here to go ahead and see what's being involved, I was so glad to be a part of this project to make sure that, you know, to -- to see our people go ahead and do something. You know, do something better with our land, you know, with the job and everything that's the potential economic development that's going to be for us.

And for me to go ahead and be conscious of what, you know, how sacred our land is and mother earth and grandmother moon and how we go ahead and treat our land sacred. And we like to go ahead and keep that type of attitude we have

going with our people.

There's been other developments that's been going on in our land which didn't go as well as we planned, but to go ahead and see something like this, solar, you know, to go ahead and see a solar project, to go ahead and come to our land as something that, you know, I was so glad to see that come out here to our land.

You know, because in the past, we've just been sitting here just as natives just sitting on our land to go ahead and see things go by and go ahead and see -- we have, like, a huge corridor that's going through our land that's a power corridor that has everything from fiberoptic, gas, power, everything that's going through there.

For us to go ahead and sit there and, you know, watch this happen. You know, we just go ahead and doing nothing about it. To go ahead and see, you know, do something more with it. And we understand the potential it has. The potential it has for that to go ahead. We can go do something better with it.

And, you know, our previous council was the one that went ahead and made the approach to

go ahead and talk with the people here at K Road to go ahead and start this type of development.

It wasn't something that we just went ahead and said, "Hey," you know, "let's flip the coin."

We did everything on our side to make sure that what we wanted to do was right. What we wanted to go ahead and make sure we do everything that would be best that would be beneficial for all of us.

So we're talking with Tom and talking with everybody else with K Road. Go ahead, you know, and have them work with us so well together. To see that everything we're doing right now is just so great to go ahead and to see everything go through so well to see this project move as fast as it has.

But at the same time, you know, it's just mentioned tonight, you know, sovereignty issue that we have. A lot of people don't understand the sovereignty that we have on our reservation, how we -- you know, we are independent and how we are separate from Clark County and the State of Nevada. And for us to go ahead and push something forward like that,

yes, we can go ahead and do something like that, too.

But, you know, we want to go ahead and be the tribe that wants to be the one that -- to make the example for other reservations out there that want to go ahead and pursue solar projects or any other economic development to show that we want to work together with everybody to make sure that, you know, we have that unity together. Not only just with the BIA, you know, working with Amy, working with Kellie here, you know, with all we got going on right now.

You know, to see everybody else come out here, you know, to see -- you know good to see Dave out here. You know, we had a pretty good talk yesterday, and talking with Jane with the Sierra Club to go ahead and make sure that we -- you know, we understand, you know, that we want to make sure that nothing goes wrong. We want to do everything that's right for our people, and we don't want to make sure that nothing holds us back to go ahead and show -- you know, like for us to go ahead and do something that's going to go ahead and slow the project down would be more or less on our part.

But we want to make sure that, you know, we are fair. We want to make sure that we talk to everybody, let everybody know what's going on to show that strength and show that unity that we have as a people.

Our people that we have, we are very proud people. To go ahead and show that type of faith and working in cooperation with everybody here is something is that, you know, we want to go ahead and show everybody else that that's what we are, this is who we are.

Moapa Band of Paiute are the people that we are to try to go ahead and set that example, to go ahead and show that sovereignty, that strength, that pride that we have in our people. We want to go ahead and bring out what, you know, the development that we have for the solar project.

Excuse me for my throat. I've been talking a little bit too much for the past few days here. I've been quite busy. You know, it's just something that, you know, I've been trying to talk to make sure that I want to make sure that everybody here knows how I feel about this project. To see, you know, for our own people to

go ahead and work well with, you know, this development that's coming along to make sure to ensure that we're not just looking out for our people but we're look out for our youths.

We're looking out for generations, and we're looking towards the generations of all our people, you know. I have my kids, and to go ahead and help feed their kids. And for them to grow up to show that what we done. To go ahead and say to lead that example, to show that we have that -- again, that pride that we try to go ahead and show. And instead of being treated as just, you know, the way, you know, we've been had, just like put to the side as just, you know, a small minority that we have, you know, we have here.

Like to go ahead and see other, you know, just go ahead and have our -- how would I say it? Like, you know, our relation and everything that we have just now to be recognized. You know something like that that we're finally going ahead, and we're trying to go ahead and get out there, not just with casino developments and other projects they have.

You know, the grow green project -- not

grow green. The green project that we have that we're looking towards, not just started with the solar but it started with another council member to go ahead and start something with the multi-facility, the multi-facility that we have out there. To go ahead to use as a biofield to go ahead -- not only just go ahead and start recycling and start a multi-facility for ourselves, but to go ahead and turn that around as economic development for our tribe to go ahead and start that out and show that we want to go ahead and prove that we want to be that type of tribe that's recyclable.

And to start with them and to see how that facility has grown from just one little small entity that we're in the red here with our farming community, to go ahead and turn that around and see that in black and go ahead and see that grow even more and more. And the opportunity that we have available for them to work along with this is something, you know, I'm really excited as well, you know, proud to go ahead and see that.

But you know, that's why I wanted to go ahead and come out here to say this to say that,

you know, I'm glad to see Kaibab Tribe for them to come out and see what's going on, to make sure everything that we're doing, to see how we're working well with K Road and everybody else here to make sure that we're doing what we can to go ahead and make sure that we want to go ahead and have that project available on our land to show that we do have solar.

We're working with recyclable, and we're trying to go ahead and take care of things that's been going on on our land, that's been going on for so long, you know, just little things that we have that we're now starting to talk about. That was something we never really considered to go ahead and start thinking about a ten-year plan and working towards our community and towards our people, not just our reservation, but our surrounding community as well. That goes as far as here as Las Vegas.

You know, our people here have been migrating all over back and forth from Las Vegas through California, Arizona, Utah, and back. And to see, you know, petroglyph that's out there. To be a part of that culture and to say, you know, "Where you from?"

You know, "I'm here from Las Vegas."

It's always everybody from somewhere, you know. I'm here from Nevada, born and raised.

"Hey, you know, that's great."

But that's our people. Our people have been here for so many generations. To go ahead and be here and, you know, on the first people to go ahead and be starting the farming and going with the meadows. But to have, you know, things like that available, you know, for our community, to be a part of this land and to go ahead and be a part of to bring that back to show that, you know -- to show that not to go ahead and destroy the earth and not to go ahead and ruin the skies and not to go ahead, you know, how -- you know, how the development -- how other energy companies have been done in the past. To see that this is what we want to go ahead and do, not for now, but just for everywhere else down the line to make sure that this is how we want to be and this is what we want to do.

And, again, thank everybody for coming in here tonight. To go ahead and see everybody again and then some. To go ahead and see everybody here, you know. And see extra people

and shake more hands too out there. I'm just like, you know, glad to be a part of this project.

So thank you again for coming tonight, and have a good evening.

MR. CHANDLER: And good evening, everybody. Welcome here. Welcome. Welcome.

You're at the Las Vegas BLM office. Just some housekeeping notes here. Those of you who may not have been to the building, if you need to use the rest room, go out the door, quick left right here. Outside this door is the men's and women's rest rooms. There's a water fountain there.

We all are probably attached by cell phone; so if you do have your cell phone, please put it on vibrate mode just so we can keep the flow of the meeting going.

My name is Mark Chandler. I'm the realty specialist here for the BLM. I work with the renewable energy coordinating office; and so we handle all renewable applications, and clearly this project is a renewable project.

I want to take a moment here just to introduce and let you know there are several BLM

employees here. If I can get the BLM employees to stand up and sort of wave here. Up in the front row here is Kathleen Sprawl. She's our archaeologist. In the red shirt here is John Evans. He's our environmental planner. And the wonderful lady over there moving across the room, that is Brenda Wilhite. She's also realty specialist in the renewable energy coordinating office. The young man in the back with the blue shirt there, that's Mark Spencer. He represents the management team here. He's the field manager here for the front field office. So we will be here to answer any questions.

BLM's role in this project is we are a cooperating agency with the BIA and the tribe on this project. We have a little bitty part of he project, which is the transmission line in the road that comes off of the tribal land. So we'll be acting as a cooperating agency and writing the grant for the transmission line portion of he project.

Having said that, I'm going to turn this over to Ms. Amy Heuslein representing the BIA.

MS. HEUSLEIN: Thank you, Mark, and thank you for the BLM for allowing us to hold the

public scoping meeting here tonight at this office.

Again, my name is Amy Heuslein, and I'm with the Bureau of Indian Affairs, Western Regional Office in Phoenix, Arizona. I'm going to be giving you some information regarding the National Environmental Policy Act and why we're here tonight just in a moment.

But first of all, I want to do a little introduction and welcome you all to the meeting and also encourage you to learn about it tonight and also to submit any comments that you may have on the project.

This is a public scoping meeting, and it gives you the opportunity to come in and to get information about the proposal, how the proposal is going to be on the Moapa River Reservation, Indian Reservation, which is about 50, 60 miles northeast of here, and you'll find more information on posters in the back and as we go through our presentations.

There are a couple of people in the audience I also would like to introduce tonight, staff that we have from our office in Phoenix.

Bureau of Indian Affairs, by the way, we

have a regional office; and it covers 42 tribes or tribal reservations in a six-state region. So we have tribal land in Arizona, Nevada, and Utah. And then there is overlap of several reservations along the Colorado River into California and also several tribes who are in the Northern Nevada area into Oregon and Idaho also.

So it's quite a large region at this time, well over 12 million acres, both of tribal land and also Indian allotment.

So we do have quite a few areas to cover, a lot of different issues, a lot of different programs and projects for tribes. And we have a local office that deals with the Moapa Band of Paiute Indians in this particular project.

Also in the audience tonight, I'd like to introduce some of my staff folks we have here. One is Gary Cantley. Gary stand. He's the regional archaeologist. So he helps with the cultural resource issues that we might have on this particular project.

Another gentleman -- I don't know where he's sitting, but I can't see him -- Alan Gross -- oh, there you are, Alan -- of

Hallock Gross, and they're helping us out as an environmental consultant with the review of the documentation that's going to be prepared.

We also have a group here that's with Malcolm Pirnie, which is also called ARCADIS; and they are the environmental firm that's been hired to assist BIA with the writing of the EIS, Environmental Impact Statement. Sometime I'll throw out acronyms because I've been using acronyms all of my life; so I'll try to catch myself for folks who don't know those.

We also have three agencies, federal agencies, who are going to be cooperating agencies on the EIS. Those include the Environmental Protection Agency, EPA, Region 9 out of San Francisco.

We also have the Bureau of Land Management, BLM, because they have a potential action with the right of way for transmission line. And then also the U.S. Army Corps of Engineers. We may have an issue with Clean Water Act. So they're going to be on board with us also. And, of course, the tribe. The Moapa Band of Paiute automatically a cooperating agency because we're dealing with their lands. These

are trust lands, and they become a cooperator with the BIA in this, but the BIA is the leading federal agency because our federal action that we'll be looking at is the approval of a long-term lease of land for this particular project, the solar project.

With that in mind -- you'll get a little more detail behind it. I just wanted to set the stage here for you, and I'd like to now introduce Kellie Youngbear. Kellie is our agency superintendent for the Southern Paiute Agency of BIA, Bureau of Indian Affairs, in St. George, Utah.

So, Kellie, come on up.

MS. YOUNGBEAR: Hi. Good evening, everyone.

My name is Kellie Youngbear. I'm the superintendent in St. George, Utah.

Our service area covers the Southern Paiute Tribe in Utah. The Kaibab Paiute Tribe in Northern Arizona, which is near Fredonia, and then also the two tribes here in Las Vegas, which is Las Vegas and Moapa.

The purpose of our involvement is our agency will be the approving official for solar

lease up to 30 years and other associated realty transactions like rights of way or easements.

With that, I would like to introduce our agency staff who will be working on this lease and the Environmental Impact Statement.

Paul Slackly is our national resource specialist. And Mr. Michael Haller is our realty specialist.

This lease is a solar energy lease. It's to conduct and operate a 350 megawatt photovoltaic facility. So that is how we're involved with the other cooperating agencies as well.

Thank you.

MS. HEUSLEIN: Thank you, Kellie.

I'd like to go in and give you a little background and explanation of the Environmental Impact Statement process as it relates to compliance with the National Environmental Policy Act, what we call our term "NEPA" and the documentation that we'll be working on during this process.

It's usually what we call a potentially three-phase process, and we're actually in Phase 1 right now.

The BIA has issued a Notice of Intent or what we call an "NOI" in the Federal Register, and that notice was published on February 4, 2011.

We are now conducting our public scoping meeting. We held our first one last night over at the Moapa River Indian Reservation, and tonight we're here at the BLM.

These public scoping process is allowing us to get input and solicitation from the public regarding what your thoughts are on this project, and you know, normally we -- you know, we'd like your opinion as far as, you know, whether you like the project or you don't. But more valuable to us in our analysis and when we collect the data, we need to analyze the impact of this project on the environment ideas from you all. Issues that you might have or concerns will help us more in taking a look at what we need to address in the documentation.

So that could encompass any resources or alternatives that you might have in mind or things that would work out. Anything that you think would be helpful in us identifying impacts to resources and how we could mitigate those

impacts from this project.

So, again, that's what scoping is about is trying to get as much input on what you all think would be, you know, about this particular proposal.

Next comes the draft EIS. We anticipate, once we gather the data and we've analyzed it and put this document together, the draft EIS would come out for public review; and that usually is a 45-day comment period, and that is based on the regulatory requirements that the BIA has to go through and any other federal agency for that matter.

The federal regulations for the National Environmental Policy Act are under 430 CFR 1500 to 1508.

The Department of Interior, who BIA is under, also has procedures and policies we have to follow for the NEPA compliance; and each of the bureaus has their own guidance as far as how they do their NEPA compliance, how they develop their documents.

We anticipate that draft period of looking at the draft EIS will probably be sometime this summer. So looking at our comment

period time. And then we'll also be holding public meetings again at that time. I would assume we'll be back out on the reservation, and we'll probably have it here again, and at that time you'll be able to have a document in front of you, and you'll be able to see what we've actually analyzed.

Then we get into a Phase 3 approach, and that deals with the final EIS. And that final EIS will be produced and address any public comments that come in, and that we have a 30-day waiting period before we go into preparing and issuing the record of the decision. That record of decision will tell us, you know, whether we go forward with the proposed action, whether we select another alternative, or whether we make a decision on possibly no action alternative.

And then, after that, then the Bureau of Indian Affairs could make a decision on the lease itself. So that would be our implementing action. It's not the environmental document and the record of decision but the actual approval of the lease itself or any subsequent other actions such as rights of way or either access roads or utility corridors for transmission or power

lines.

Scheduling. We have an anticipated schedule, and it's a very ambitious schedule, but we're going see if we can make it work or not. So that's -- I have done an EIS in less than a year, and we're going to try to get it done. And if it's successful, that means a lot of effort has to be put into it; and we hope we can get it accomplished. We don't think this is a complicated process and -- or a project. And hopefully, if everybody's on board, we can accomplish it.

But anyway, as I said, we're in Phase 1 right now here in February. By July we hope to have the draft EIS out. By October we hope to have the final out and then a decision made and implementing the action by December.

How can you all participate? Well, there are a handful of ways that, you know, your options are out there for being involved with this process as the public.

You can go ahead and submit your comments verbally at the end of this presentation. We'll allow that open dialogue to occur, and that's an option.

If for some reason that you do not want to verbally comment, you're more than welcome to submit a comment directly to our court reporter, and she'll take your comment if you don't want to speak publicly, or you can submit your comment via comment card -- I think those are out in the back table and handouts, along with the handout sheet that we had on the project -- and leave that behind for us to collect, or you can mail it in also.

And then we've also developed a Web site, and you can go ahead and submit comments through the Web site and also find information. We eventually would like to have that document published on that Web site; so you'd have access to the documents electronically versus hard copy. So we're trying to come into the modern age of technology here now. So hopefully that will be helpful in your process.

Now, I'd like to go on and turn the presentation over to Mr. Chad Martin. Chad's going to give us the background on the project so you kind of know what we're talking about here, and he'll point out some of the posters we have in the back for you all to look at too. And

hopefully we'll gather some ideas from you also.

So, Chad, with that in mind, please come on up.

Thank you.

MR. MARTIN: Thank you all for coming. It's nice to see some new faces tonight.

Again, my name is Chad Martin. I'm with ARCADIS Malcolm Pirnie. We started working with K Road back in October of 2010 on this project and more recently with the BIA.

And we're pleased to be working hand in hand with Amy and her group to hopefully create and get a successful project going for the tribe.

So with that we'll go over some details tonight -- the basic purpose, which we've touched on briefly, besides the type of the photovoltaic we're going to use, the general location, some associated features that are part of the project, the resource study that we've completed to date. And Amy kind of already touched on the schedule; so we'll recap that at the end.

So the purpose, Number 1 purpose, is this is an economic stimulus for the tribe. It's going to provide jobs for the tribe. There will be things that are connected to this project that

are going to provide economic stimulus for the area. It's going to assist utilities to meet some of Nevada's and California's energy goals. So we're going to achieve these objectives with minimal adverse impacts as much as practical.

The other nice thing about this project is the tribal center that's off of I15 that the tribe owns and runs. It currently runs off of generators and diesel fuel.

So in the past they would have to connect directly to the grid, which could be a pretty expensive process. This is an opportunity for the tribe to connect fully to the solar generation facility directly, which is across the street, and provide the tribal center with clean, renewable energy, and allow them not only to meet their current needs but their future needs as well.

So this is a snapshot. You can see Vegas down here in the corner. This is the Moapa Reservation, in the hatched area. And that red polygon is a two-acre site that we're looking at to place the facility.

It's a polygon. It's kind of a weird shape. The reason for that this is a mesa that

sits up anywhere from 30 to 40 feet above the surrounding land.

The associated features here is going to be an electric transmission line, which you can see in this red line right here. It's approximately 3.9 miles. It's a straight shot to the Crystal Substation.

We're also looking at some alternatives. There is a 5,000-foot wide BLM existing utility corridor there. It's pretty full at this point. We're more recently giving it a heavy look. We can use that and try to utilize the comments that we are hearing from the agency and cooperate with that.

It's a 350 megawatts facility, PV, which photovoltaic technology is the chosen technology we like to use. We're going to use single-axis trackers. To my knowledge, there's single and there's dual axis. Single axis obviously just moves in one plane. It has less moving parts, and it's a little bit more reliable.

Dual axis is going to move in multiple planes and more moving parts. Most likely more expensive, and there is more room for air.

We're going to build the project out in

three phases. We're not positive if we're going to start in the north or in the south. We're still looking at that as part of the alternative.

So why PV? Number 1, it's proven technology. We've been using it for a while. It's reliable. It's got a 25- to 30-year, I think, lifespan. There's a decreased need for water. There will be water needs obviously during construction to startup for dust compression. And right now we're looking at quarterly panel washing.

Maximum water usage right now -- or estimated right now, when the entire 350 megawatts is built, it's about 25 acre feet a year.

No greenhouse gas emissions, and there is minimal noise from the transformers and the single tracker engines -- not engines, but single tracker systems themselves.

The other nice thing, being up on top of the mesa there is a reduced visual impact. We recently completed a visual impact study last week as a matter of fact. These panels that you're seeing, these little figures around it are people. Depending on the exact brand of the

panel that we're going to use, they'll range from six feet to ten feet in height. Compared to other technologies, they could reach 30 to 40 feet with towers, and thermal towers can reach 200, 250 feet in the air.

So from the south coming up I15 you will not even see the solar plant on top of the mesa. From the west there are really no viewpoints. Most of the view is blocked with utility line corridor, and you're at a lower elevation; so you won't see any PV from there.

The Exit 75 that goes to the Valley of Fire, about two miles down the road, if you look back, you can just now start to see the top of that mesa. So you will see it from a distance, but up closer towards the Tribal Plaza, again, because of the elevation of the mesa and the low elevation of the PV panels, you won't have any visual effect.

The main place that you'll see this is if you're traveling from north to the south down Interstate 15. About five miles out you can start to see the mesa, and then it's just for a brief period for a mile or two, and it disappears for a mile, and then it comes back for about a

mile, and then you're close enough to where you're under the mesa and you won't be able to see it.

So there is very limited viewshed, and I think most people that aren't savvy to the field being out there may not even know that it's there.

This highlighted three-dimensional thing, the darker panel section, that's a one megawatt section. So if you can visualize 350 of those on the next slide. This is kind of a bird's eye view. This is not the layout to date. This is just something we wanted to put out there to kind of show what the layout could look like.

The reason for these gaps is there are some deep drainages out there. No drainage from the surrounding mountains actually comes onto the mesa. It all goes around the mesa. So this is drainage over the years that has happened on the site, and some of these are 20, 30-foot cliffs that dropped straight off. So there will be some areas that probably we won't be able to build in; so we're going to work around those.

Some other features at this site is going to be an operation and maintenance

I, the undersigned, a Certified Court Reporter of the State of Nevada, do hereby certify,

That the foregoing proceedings were taken before me at the time and place herein set forth;

That any witnesses in the foregoing proceedings, prior to testifying, were duly sworn;

That a record of the proceedings was made by me using machine shorthand which was thereafter transcribed under my direction;

That the foregoing transcript is a true record of the testimony given.

Further, that before completion of the proceedings, review of the transcript [ ] was [X] was not requested.

I further certify I am neither financially interested in the action nor a relative or employee of any attorney or party to this action.

IN WITNESS WHEREOF, I have this date subscribed my name:

Dated: _____

_____
Kimberly M. Lowe
CCR No. 849

A

able 20:5,6 28:2,22
access 20:24 22:15 29:17 29:17 30:13,15,17 30:23 31:8
accomplish 21:12
accomplished 21:9
achieve 24:4
acre 26:14
acres 14:9 36:9
acronyms 15:9,10
Act 13:7 15:22 17:20 19:15
acting 12:19
action 15:19 16:3 20:15,17 20:21 21:17 37:18 37:19
actions 20:23
actual 20:22
add 34:22
address 18:20 20:10 35:7,9 35:12
adult 31:15
adverse 24:5
aerial 30:22
Affairs 1:2 13:4,25 16:12 20:19
age 22:17
agencies 15:12,13,14 17:12
agency 12:15,19 15:15,24 16:3,10,11,25 17:4 19:13 25:13
aggressive 32:15
ahead 2:6,10,14,17,21,24 2:25 3:4,5,6,11,12 3:17,19,19,22,25 4:1,2,4,8,12,15,25 5:1,3,6,17,22,23,24 6:7,10,13,14,16 7:1 7:8,9,12,17,18,22 7:23 8:4,6,7,7,9,10 8:12,17,18,23,25 9:6,6,10,15 10:6,8 10:11,13,14,15,18 10:23,24 21:22 22:12 36:1
air 25:24 27:5
Alan 14:24,25
allotment 14:10
allow 21:24 24:16
allowing 12:25 18:9
alternative 20:16,17 26:3
alternatives 18:22 25:8
ambitious 21:3
Amy 5:11 12:23 13:3 23:12,20 32:14
analysis 18:15
analyze 18:16
analyzed 19:8 20:7
Anderson 2:5,7
answer 12:13
anticipate 19:7,23
anticipated 21:2
anyway 21:13
applications 11:22
appreciate 36:21
approach 3:25 20:8
approval 16:4 20:22
approving 16:25
approximately 25:6 29:10
ARCADIS 15:5 23:8
archaeologist 12:4 14:20
area 14:7 16:19 24:2,21 30:8 34:11,14
areas 14:11 28:22
Arizona 9:22 13:5 14:3 16:21
Army 15:20
assessment 31:18
assist 15:7 24:2
associated 17:1 23:18 25:3 31:3
assume 20:3
attach 35:20
attached 11:15
attitude 2:25
attorney 37:19
audience 13:23 14:17
automatically 15:24
available 8:20 9:7 10:10 32:25
Avian 32:2,4
aware 34:1
axis 25:19,19,22

B

back 5:22 9:21,22 10:12 12:9 13:20 20:3 22:7,25 23:9 27:14 27:25 30:24 31:9 33:2,20
background 17:17 22:22 36:2
Bald 32:4
Band 1:15 2:8 6:12 14:15 15:23
based 19:11
basic 23:15
basically 29:1
bathroom 31:6
believe 29:20 32:12
beneficial 4:10
benefit 36:10
best 4:9
better 2:18 3:23
BIA 5:10 12:15,23 15:7 16:2,2,12 18:1 19:12,17 23:10 31:18,20 32:8
biofield 8:6
biological 31:17 33:14
biologists 31:13
bird's 28:12
bit 6:20 25:21 30:25
bitty 12:16
black 8:18
BLM 1:7 11:8,20,25 12:1 12:25 15:18 18:8 25:9 29:15 30:3 32:1
BLM's 12:14
blocked 27:9
blue 12:9 29:4 30:6
board 15:22 21:11
boost 36:14
born 10:3
botanist 33:24
bottle 32:11,12
brand 26:25
Brenda 12:7
brief 27:24
briefly 23:16
bring 6:16 10:12 30:11
bringing 29:22
buffer 30:8
build 25:25 28:22 36:14
building 11:10 29:1 31:5,6
built 26:14 30:12
Bureau 1:2 13:4,25 15:17 16:12 20:18
bureaus 19:20
burrows 31:17
busy 6:21

C

C 2:2
cacti 31:23 33:25
cactus 31:24,25
California 9:22 14:5
California's 24:3
call 17:20,23 18:2
called 15:5 30:14
Cantley 14:19
card 22:6 35:8

cards 33:2
care 9:10
casino 7:23
catch 15:10
CCR 1:22 37:25
cell 11:15,16
cement 33:18
center 24:7,15 33:13
Certified 37:1
certify 37:3,17
CFR 19:15
Chad 22:21 23:2,7
Chad's 22:21
chairman 2:5,8
Chandler 11:6,19 34:23
choose 30:20
chosen 25:16
Clark 1:17 4:24 29:9
clean 15:21 24:15
clearly 11:22
cliffs 28:20
close 28:1
closely 32:19
closer 27:16 29:14 31:1
Club 5:17
coin 4:5
collect 18:15 22:9
color 30:3
Colorado 14:5
come 3:6,8 5:13 8:25 9:2 13:15 16:14 19:9 20:11 22:17 23:2
comes 12:18 19:6 27:25 28:17
coming 7:2 10:22 11:4 23:5 27:6
comment 19:10,25 22:2,3,4,5 22:6 33:2,7 34:4 35:14
comments 13:12 20:11 21:23 22:12 25:12 33:5 34:19,25 35:3 36:4
community 8:17 9:16,18 10:10
companies 10:16
Compared 27:2
complete 32:2,4 33:20
completed 23:19 26:22 31:23 32:6 33:15
completion 31:19 37:14
compliance 17:19 19:19,21
complicated 21:10
compression 26:10
concerns 18:18
concluded 36:23
conduct 17:10
conducting 18:5 31:12
connect 24:11,13
connected 23:25
conscious 2:21
consider 34:9
considered 9:14
construction 26:9 30:10
consultant 15:2
consultation 31:21 32:9
conversations 29:22
cooperate 25:13
cooperating 12:15,19 15:13,24 17:12
cooperation 6:8
cooperator 16:1
coordinating 11:21 12:8
copy 22:16
corner 24:20
Corps 15:20
correct 35:4,5 36:8
corresponded 31:10
corridor 3:13,14 25:10 27:10 29:13 30:7,10,11
corridors 20:25
council 3:24 8:3
County 1:17 4:24 29:9
couple 13:22
course 15:23
court 22:3 33:3 36:10 37:1
cover 14:12
covers 14:1 16:19
create 23:12
Crystal 25:7 29:3,14 30:23
cultural 14:21 32:6
culture 9:24
cumulative 34:5,10,14
current 24:17
currently 24:8 31:17 32:16

D

D 2:2
darker 28:9
data 18:16 19:7
date 23:19 28:12 37:20
Dated 37:23
Dave 5:15
David 36:7
days 6:21
dealing 15:25
deals 14:14 20:9
December 21:17 32:7
decision 20:13,14,17,19,22 21:16
decrease 29:24
decreased 26:7
deep 28:16
Department 1:1 19:17
depending 26:25 30:19
desert 31:12
destroy 10:13
detail 16:8
details 23:14 35:10
develop 19:21
developed 22:11
development 2:20 4:2 5:7 6:17 7:2 8:10 10:16
developments 3:2 7:24
dialogue 21:24
diesel 24:9
different 14:12,13
direct 30:15
direction 37:11
directly 22:3 24:11,14 34:20 35:14
disappears 27:24
distance 27:15
Diversity 33:14
document 19:8 20:5,21 22:14 35:15,17,17
documentation 15:3 17:21 18:20
documents 19:22 22:16
doing 3:19 4:14 9:3,5
door 11:11,12
download 35:16
Downtown 29:10
draft 19:6,9,23,24 21:15
drainage 28:16,19
drainages 28:16
dropped 28:21
dual 25:19,22
due 35:4
duly 37:7
dust 26:9

E

E 2:2,2
Eagles 32:4
earth 2:23 10:14
easements 17:2
easier 30:25
easy 36:3
economic 2:20 5:7 8:10 23:23 24:1 36:13
effect 27:19
effort 21:7
eight 31:13
EIS 15:7,14 19:6,9,24 20:9,10 21:5,15
either 20:24 35:22,24
electric 25:4 30:6
electricity 29:2
electronic 35:11
electronically 22:16
elevation 27:10,17,18
emissions 26:16
employee 37:19
employees 12:1,1
encompass 18:21
encourage 13:11
endangered 34:2
energy 10:16 11:21 12:8 17:9 24:3,16 34:7 36:17
Engineers 15:21
engines 26:18,18
ensure 7:3
entire 26:13
entity 8:16
entrance 30:16
environment 18:17
environmental 1:14 12:5 13:7 15:2 15:6,8,15 17:5,17 17:19 19:15 20:21
EPA 15:15
equipment 29:23
estimated 26:13
Evans 12:5
evening 11:5,6 16:15
eventually 22:14
everybody 4:12 5:8,13 6:3,3,8 6:10,24 9:4 10:2,22 10:23,25 11:7
everybody's 21:11 36:22
exact 26:25 33:19
example 5:5 6:13 7:10
excited 8:22 32:20 36:12
Excuse 6:19
existing 25:9 29:5
exit 27:12 29:17,18 30:14,14
exiting 29:24
expecting 30:8
expensive 24:12 25:24
explanation 17:17
Express 34:12
extra 10:25
eye 28:12
e-mail 35:19,21,23

F

faces 23:6
facilities 31:6
facility 1:16 8:15 17:11 24:14,23 25:15
fact 26:23
fair 6:2
faith 6:8
far 9:18 18:13 19:20
farming 8:17 10:8
fast 4:17 31:10
features 23:18 25:3 28:24 31:3
February 1:19 2:1 18:3 21:14 32:15
federal 15:12 16:3,3 18:2 19:12,14
feed 7:8
feel 6:24 34:18,24
feet 25:1 26:14 27:2,2,4 27:5 30:10,12
fiberoptic 3:15
field 12:11,12 28:5
fiercely 33:3
figures 26:24 32:23
final 20:9,9 21:16
finally 7:22
financially 37:17
find 13:19 22:13 32:11 33:21
Fire 27:13
firm 15:6
first 10:7 13:9 18:6
Fish 31:11,21 33:23
five 27:22
flip 4:4
flow 11:18
folks 14:18 15:11
follow 19:19
footprint 33:20
foregoing 37:4,6,12
formal 31:20
forth 9:21 37:5
forward 4:25 20:15
found 32:11,13
fountain 11:13
Francisco 15:16
Fredonia 16:21
free 34:18,24
front 12:3,12 20:5
fuel 24:9
full 25:10 36:12
fully 24:13
further 37:14,17
future 24:17 36:16

G

G 2:2
gaps 28:15
Gary 14:19,19
gas 3:15 26:16
gather 19:7 23:1 29:1
general 23:17
generation 24:14
generations 7:5,6 10:6
generators 24:9
gentleman 14:23
George 16:12,18
give 17:16 22:22 34:19
given 37:13
gives 13:15
giving 13:6 25:11
glad 2:15 3:7 9:1 11:2 36:18
go 2:5,10,14,17,21,23 2:25 3:3,4,5,6,11 3:11,12,17,19,19 3:22,22 4:1,2,8,12 4:15,16,25 5:1,3,6 5:17,22,23,24 6:7 6:10,13,14,16 7:1,7 7:9,11,17,18,22 8:4 8:6,7,7,9,10,11,17 8:18,22,24 9:5,6,10 9:14 10:6,8,11,13 10:14,15,18,23,24 11:11 13:20 17:16 19:12 20:12,14 21:22 22:12,20 23:14 35:13,25 36:1
goals 24:3
goes 5:19 9:18 27:12 28:18 34:13

going
2:8,10,10,20 3:1,3 3:13,15 5:12,23 6:3 7:22 9:2,11,11 10:8 11:18 12:22 13:5 13:17 15:3,13,22 21:4,6 22:22 23:13 23:17,24 24:1,2,4 25:3,17,22,25 26:1 27:1 28:23,25 29:4 32:3 34:5,9
Golden
32:4
good
5:14,15 11:5,6 16:15 36:15
GPS
31:16
GPS'd
31:24
grandmother
2:23
grant
12:20
great
4:15 10:4
green
7:25 8:1,1 36:17
greenhouse
26:16
grid
24:11
Gross
14:25 15:1
ground
31:10
group
15:4 23:12
grow
7:9,25 8:1,19
grown
8:15
guidance
19:20

H

half
29:12
Haller
17:7
Hallock
15:1
hand
23:11,12
handful
21:19
handle
11:22
handout
22:7
handouts
22:7 32:23
hands
11:1
happen
3:18 32:19
happened
28:19
happy
34:20
hard
22:16 32:18
hatched
24:21
hearing
25:13
heavy
25:11
height
27:2
held
18:6
help
7:8 18:18
helpful
18:24 22:19
helping
15:1
helps
14:20
Heuslein
12:23,24 13:3 17:15 35:22
Hey
4:4 10:4
he'll
22:24
Hi
16:15
highlighted
28:8
hired
15:6
Historic
32:10
hit
31:9
hold
12:25
holding
20:1
holds
5:21
hope
21:8,14,15
hopefully
21:11 22:18 23:1,12
hoping
29:21
housekeeping
11:9
huge
3:12
hundred
30:12 31:19

I

IBEW
36:8
Idaho
14:7
ideas
18:17 23:1
identifying
18:24
impact
1:14 15:8 17:5,18 18:16 26:21,22 32:5 34:10,14
impacts
18:24 19:1 24:5 34:5
implementing
20:20 21:17
importance
2:12
improved
30:18
improvements
30:20
inaudible
34:7
include
15:14
independent
4:23
Indian
1:2 13:4,18,25 14:10 16:12 18:7 20:19
Indians
1:16 14:15
information
13:6,16,20 22:13
input
18:10 19:3
intend
32:1 33:16
Intent
18:1
interested
37:18
Interior
1:1 19:17
Interstate
27:22
introduce
2:6 11:25 13:23 14:18 16:9 17:3
introduction
2:11 13:10
inventory
31:24
involved
2:15 17:12 21:20
involvement
16:24
issue
4:20 15:21
issued
18:1
issues
14:12,21 18:18 29:24
issuing
20:13
I15
24:7 27:6

J

Jane
5:16
job
1:23 2:19
jobs
23:24
John
12:5
Jones
36:7,7,20
July
21:14

K

K
1:15 4:1,12 9:4 23:9
Kaibab
9:1 16:20
Kathleen
12:3
keep
2:25 11:17
Kellie
5:11 16:10,10,14,17 17:15
kids
7:7,8
Kimberly
1:21 37:24
kind
22:23 23:20 24:24 28:11,14
know
2:16,17,18,22 3:5,7 3:9,18,18,20,24 4:4 4:13,18,19,22 5:3,9 5:10,11,13,14,14 5:15,18,18,22 6:1,3 6:9,16,21,22,25 7:1 7:7,13,13,14,15,18 7:19,21,25 8:21,22 8:24 9:1,12,20,23 9:25 10:1,3,4,7,9 10:10,13,15,15,25 11:2,25 14:23 15:11 18:12,12,13 19:4 20:14 21:19 22:23 28:6 35:24
knowledge
25:18
knows
6:24
KV
29:16 30:9

L

lady
12:6 34:25
land
2:18,22,24 3:3,6,8 3:11,13 9:7,11 10:11 12:18 14:3 14:10 15:17 16:5 25:2 30:4
landownership
30:2
lands
15:25 16:1
large
14:8
Las
1:18 2:1 9:19,21 10:1 11:8 16:22,23 29:11
layout
28:12,14
lead
7:10
leading
16:2
learn
13:11

lease
16:5 17:1,4,9,9 20:19,23
leave
22:8
left
11:12
legislation
32:3
let's
4:4
life
15:10
lifespan
26:7
lighter
30:3
limited
28:4
line
10:19 12:17,20 15:20 25:4,5 27:9 29:13,16 30:6,9 31:4 34:13
lines
21:1 30:17
links
36:2
literature
33:22
little
6:20 8:15 9:12 12:16 13:9 16:7 17:16 25:21 26:24 30:25
local
14:14 36:8
Located
31:15
location
23:17
long
9:12
long-term
16:5
look
7:4 18:19 22:25 25:11 27:13 28:14 31:1 33:25
looked
33:23
looking
7:3,5,6 8:2 16:4 19:24,25 24:22 25:8 26:3,10 29:16 33:19 34:1
lot
4:20 14:12,12 21:7 33:22 36:13
low
27:17
Lowe
1:21 37:24
lower
27:10

M

M
1:21 37:24
machine
37:10
mail
22:9
main
27:20
maintenance
28:25 31:5
Malcolm
15:5 23:8
man
12:9
management
12:11 15:18
manager
12:11
map
29:18 30:6
maps
30:24 32:23
March
35:4
Mark
11:19 12:10,24 34:22
Martin
22:21 23:5,7 33:10 33:17 34:15 35:5,8 35:13,19 36:5,18 36:21
matter
19:13 26:23
Maximum
26:12
meadows
10:9
mean
35:17
means
21:7
meant
36:9
meet
24:2,16
meeting
1:7,14 11:18 13:1,10 13:14 18:6
meetings
20:2
megawatt
17:10 28:10
megawatts
25:15 26:14
member
8:3
mentioned
4:19
men's
11:12
mesa
24:25 26:21 27:7,15 27:17,23 28:2,18 28:18
Michael
17:7
migrating
9:21
mile
27:24,25 28:1 29:12
miles
13:18 25:6 27:13,22 29:10 31:14
million
14:9
mind
16:7 18:22 23:2
minimal
24:5 26:17
minority
7:15
minutes
34:17
mitigate
18:25
Moapa
2:8 6:12 13:17 14:15 15:23 16:23 18:7 24:20 29:11 30:2
mode
11:17
modern
22:17
moment
11:24 13:8
moon
2:23
Morwka
33:9,12,13 34:4 35:2 35:6,11,16,21
mother
2:23
mountains
28:17
move
4:17 25:22
moves
25:20
moving
12:6 25:20,23
multiple
25:22
multi-facility
8:5,5,8
M-O-R-W-K-A
33:13

N

N
2:2
name
2:7 11:19 13:3 16:17 23:7 33:10,12 37:21
national
13:7 17:6,19 19:14
natives
3:10
near
16:21
need
11:11 18:16,19 26:7 33:1 34:9 36:17
needs
24:17,17 26:8
neither
37:17
NEPA
1:14 17:20 19:19,21
Nevada
1:17,18 2:1 4:24 10:3 14:3,6 29:9 32:9 37:2
Nevada's
24:3
never
9:14
new
23:6 32:3
nice
23:6 24:6 26:20
night
18:6 34:16
nine
31:25
NOI
18:2
noise
26:17
normally
18:12
north
26:2 27:21 29:10 30:13
northeast
13:19
Northern
14:6 16:21
notes
11:9
notice
18:1,3
Number
23:22 26:4

O

O
2:2
objectives
24:4
obviously
25:19 26:8
occur
21:25
October
21:15 23:9 31:9
office
11:8,21 12:9,12 13:2 13:5,24 14:1,14 32:10
official
16:25
oh
14:25
Okay
33:12 35:16 36:21
once
19:7 30:12 31:19
oOo
2:3
open
21:24 29:21 32:8 33:4
opening
2:9
operate
17:10
operation
28:25 31:5
opinion
18:13
opportunities
36:15

opportunity
8:20 13:15 24:12 36:14
option
21:25 35:25
options
21:20
Oregon
14:7
Outside
11:12
overlap
14:4
owns
24:8

P

P
2:2
Pacific
29:20
page
36:5
pages
35:18
Paiute
1:16 2:8 6:12 14:15 15:24 16:11,20,20
panel
26:11 27:1 28:9
panels
26:23 27:18
parallel
29:19
part
2:15 5:25 9:24 10:11 10:12 11:2 12:16 23:18 26:3
participate
21:18
particular
14:15,22 16:5 19:4
parts
25:20,23
party
37:19
Paul
17:6 35:23,23
PDF
32:24 35:17
people
2:17 3:1 4:1,20 5:20 6:5,6,7,12,15,25 7:4,7 9:17,20 10:5 10:5,7,25 13:22 26:25 28:5 35:24
percent
31:18,20
period
19:10,23 20:1,12 27:24
permanent
30:11
petroglyph
9:23
Phase
17:25 20:8 21:13
phases
26:1
Phoenix
13:5,24
phone
11:16,16
photo
30:22
photos
33:23
photovoltaic
1:16 17:11 23:16 25:16
Pirnie
15:5 23:8
place
24:23 27:20 37:5
plan
9:15 32:2
plane
25:20
planes
25:23
planned
3:4
planner
12:5
plant
27:7 33:15,18
Plaza
27:16
please
11:16 23:2
pleased
23:11
point
22:24 25:10
policies
19:18
Policy
13:7 17:19 19:15
polygon
24:22,24
portion
12:20
positive
26:1
possibly
20:17
posters
13:20 22:24
potential
2:19 3:21,22 15:18 29:12 30:9
potentially
17:23 29:22
power
3:14,15 20:25
practical
24:5
prayer
2:9
prepared
15:3
preparing
20:12
presentation
21:24 22:21 32:25
presentations
13:21
Preservation
32:10
pretty
5:15 24:12 25:10 31:10
previous
3:24
pride
6:15 7:11
prior
33:17 37:7
probably
11:15 19:24 20:4 28:22 30:24 32:3
procedures
19:18
proceedings
36:23 37:4,7,9,15
process
17:18,22,24 18:9 21:10,21 22:19 24:12
produced
20:10
programmatic
34:7
programs
14:13
project
2:13,16 3:6 4:16 5:24 6:18,25 7:25 8:1 9:7 11:3,23,23 12:14,16,17,21 13:13 14:16,22 16:6,6 18:11,14,17 19:1 21:10 22:8,22 23:9,13,18,25 24:6 25:25 33:18 34:6,8 34:9,10 36:12
projects
5:6 7:24 14:13 34:11
property
29:15 31:16
proposal
13:16,16 19:5
proposed
1:15 20:15 34:7
protection
15:15 32:2
protocol
31:12
proud
6:7 8:22
prove
8:12
proven
26:4
provide
23:24 24:1,15
providing
36:16
public
13:1,14 18:5,9,10 19:9 20:2,10 21:21
publicly
22:5
published
18:3 22:15
purple
30:17
purpose
16:24 23:15,22,22
purposes
36:16
pursue
5:6
push
4:25
put
7:14 11:17 19:8 21:8 28:13 31:8 36:1
PV
25:15 26:4 27:11,18

Q

quarterly
26:11
question
33:14 35:2
questions
12:13 33:5,11 34:19
quick
11:11
quite
6:21 14:8,11

R

R
2:2
railroad
29:19,23
raise
36:13
raised
10:3
range
27:1
rare
33:15
reach
27:3,4 29:21
really
8:22 9:14 27:8 32:20
realty
11:20 12:7 17:1,7
reason
22:1 24:25 28:15
recap
23:21 30:5 32:14,22
recognized
7:21
record
20:13,13,22 33:11 36:10 37:9,13
recyclable
8:13 9:9
recycling
8:8
red
8:16 12:4 24:21 25:5
reduced
26:21
regarding
13:6 18:11
region
14:2,8 15:15
regional
13:5 14:1,20
Register
18:2
regulations
19:14
regulatory

19:11
relates 17:18
relation 7:19
relationship 36:15
relative 37:18
reliable 25:21 26:6
renewable 11:21,22,23 12:8 24:16 36:17
report 32:7
Reported 1:21
reporter 22:3 33:3 37:2
reporter's 36:10
representing 12:23
represents 12:10
request 32:1
requested 37:16
requirements 19:11
reservation 4:22 9:17 13:17,18 18:7 20:3 24:21 29:12 30:2,15,16
reservations 5:5 14:2,4
resource 14:21 17:6 23:19
resources 18:21,25 32:6
rest 11:11,13
review 15:2 19:9 32:8 33:22 37:15
right 2:11 4:7,15 5:12,20 11:12 15:19 17:25 21:14 25:5 26:10 26:12,13 30:8 33:3 34:13 35:8,19 36:1 36:5
rights 17:2 20:24
River 13:17 14:5 18:7
road 4:1,12 9:4 12:18 23:9 27:13 29:5,6 30:17
roads 20:24 30:18,21,23 31:8
ROAD/MOAPA 1:15
Rob 33:13
role 12:14
room 11:11 12:7 25:24
rooms 11:13
roughly 31:16,25
route 30:19
row 12:3
ruin 10:14
running 31:10
runs 24:8,8 29:19

S

S 2:2
sacred 2:22,24
San 15:16
savvy 28:5
saw 31:24
schedule 21:3,3 23:20 32:14
Scheduling 21:2
scoping 1:7,14 13:1,14 18:5 18:9 19:2
section 28:9,10 31:21 32:9
see 2:14,16 3:4,5,7,11 3:12,20 4:14,15,16 5:13,14,14 6:25 7:17 8:14,18,18,23 9:1,2,3,23 10:17,23 10:24,25 14:24 20:6 21:4 23:6 24:19 25:5 27:7,11 27:14,15,20,23 28:3 29:6,18 30:2 30:25 32:17 34:3 36:2
seeing 26:24
select 20:16
send 35:6
sensitive 34:2
separate 4:23
septic 31:7
service 16:19
SESSION 33:7
set 6:13 16:8 37:5
shake 11:1
shape 24:25
sheet 22:8
she'll 22:4 34:25
shirt 12:4,10
shorthand 37:10
shot 25:6
show 5:7,22 6:4,4,7,10,14 7:9,10,12 8:11 9:7 10:12,13 28:14
showing 30:22
shy 34:23
side 4:6 7:14
Sierra 5:17
simply 29:8
single 25:18,19 26:18,18 31:24
single-axis 25:17
sir 36:6
sit 3:17
site 22:12,13,15 24:22 28:20,24 29:20 30:1 32:22,24 33:1 33:25 35:14,25
sites 29:17 30:13
sits 25:1
sitting 3:10,11 14:24
six 27:2
six-state 14:2
skies 10:14
Slackly 17:6
slide 28:11
slow 5:24
small 7:15 8:16
snapshot 24:19
solar 1:16 3:5,6 5:6 6:17 8:3 9:8 16:6,25 17:9 24:13 27:7 34:6,7
solicitation 18:10
sort 12:2
south 26:2 27:6,21 29:2
Southern 16:11,19
southwest 34:8
sovereignty 4:19,21 6:14
speak 22:5 33:10
specialist 11:20 12:8 17:7,8
species 32:1 34:2
specific 34:19
speech 2:11
spell 36:7
Spencer 12:10
spot 33:19
Sprawl 12:3
St 16:12,18
staff 13:24 14:18 17:4
stage 16:9
stand 12:2 14:19 35:23
start 4:2 8:4,7,8,11,14 9:15 26:2 27:14,23
started 8:2,3 23:8
starting 9:13 10:8
startup 26:9
State 4:24 32:9 37:2
Statement 1:15 15:8 17:5,18
STATES 1:1
stay 32:16
step 31:20
stimulus 23:23 24:1
straight 25:6 28:21
street 24:15
strength 6:4,15
studies 32:4
study 23:19 26:22 33:17
submit 13:12 21:22 22:3,5 22:12 35:3 36:4

submitted 32:7
subscribed 37:21
subsequent 20:23
substation 25:7 29:1,3,14 30:23 31:4
successful 21:7 23:13
summer 19:25
superintendent 16:11,18
supplies 29:23
support 36:12
sure 2:16 4:7,8 5:8,17,19 5:21 6:1,2,23,23 7:2 9:2,5,6 10:20 32:5
surrounding 9:18 25:2 28:17
survey 31:23 33:25
surveys 31:13 33:15
sworn 37:8
system 31:7
systems 26:19

T

table 22:7
take 9:10 11:24 22:4 29:2 30:25 34:25
taken 37:4
talk 4:1 5:16 6:2,23 9:13 34:20,24
talked 31:2 33:23
talking 4:11,11 5:16 6:20 22:23 35:18
tap 29:4,8
team 12:11
technologies 27:3
technology 22:18 25:16,16 26:5
tell 2:11 20:14
ten 27:2
ten-year 9:15
term 17:20
testifying 37:7
testimony 37:13
thank 10:22 11:4 12:24,25 17:14,15 23:4,5 34:15 36:18,20
thermal 27:4
thing 24:6 26:20 28:9
things 2:9 3:11 9:10,12 10:9 18:23 23:25 29:24
think 18:24 19:4 21:9 22:6 26:7 28:5
thinking 9:15
thoughts 18:11
three 15:12 26:1
three-dimensional 28:8
three-phase 17:24
throat 6:19
throw 15:9
Thursday 1:19 2:1
time 4:18 14:9 20:1,2,5 36:17,22 37:5
today's 32:15
Tom 4:11
tonight 4:19 10:23 11:4 13:1 13:8,11,23 14:17 18:8 23:6,15 32:24
top 26:20 27:7,14
topological 30:6
tortoise 31:12
tortoises 31:15,16
total 31:15
touched 23:15,20
towers 27:4,4
track 32:16
tracker 26:18,19
trackers 25:18
traffic 29:24
trained 33:24
training 36:16
transactions 17:2
transcribed 37:11
transcript 37:12,15
transects 31:14
transformers 26:17
transmission 12:17,20 15:19 20:25 25:4 29:13 30:7 31:3 34:13
TransWest 34:12
traveling 27:21
treat 2:24
treated 7:12
tribal 12:18 14:2,3,9 24:7 24:15 27:16
tribe 5:4 8:10,13 9:1 12:15 15:23 16:20 16:20 23:13,23,24 24:8,13 29:7 32:20 36:14,15
tribes 14:1,6,13 16:22
tried 36:2
true 37:12
trust 16:1
try 6:13 7:11 15:10 21:6 25:12
trying 6:22 7:22 9:10 19:3 22:17
turn 8:9,17 12:22 22:20
two 16:22 27:13,24 29:17 30:13
two-acre 24:22 36:9
type 2:25 4:2 6:7 8:12 23:16 31:7
typing 33:3

U

undersigned 37:1
understand 3:21 4:21 5:18 35:3
Union 29:20
UNITED 1:1
unity 5:9 6:4
usage 26:12
use 8:6 11:11 23:17 25:12,17,17 27:1 29:8 30:9 32:8
USGS 30:5
usually 17:23 19:10
Utah 9:22 14:3 16:13,18 16:20
Ute 30:14
utilities 24:2
utility 20:25 25:9 27:9
utilize 25:12
U.S 15:20 31:11,21

V

Valley 27:12
valuable 18:14
Vegas 1:18 2:1 9:19,21 10:1 11:8 16:22,23 24:20 29:11
verbally 21:23 22:2
versa 34:6
versus 22:16
vibrate 11:17
vice 34:6
view 27:9 28:12
viewpoints 27:8
viewshed 28:4
visual 26:21,22 27:19
visualize 28:10

W

waiting 20:12
walk 34:18,24
walking 31:14
want 2:5 5:3,6,8,18,19,21 6:1,2,9,16,23 8:11 8:12 9:6 10:18,20 10:21 11:24 13:9 22:1,4 30:25 35:23 36:3
wanted 4:7,8 8:24 16:8

28:13
wants
5:4
washing
26:11
wasn't
4:3
watch
3:18
water
11:13 15:21 26:8,8 26:12 29:8
waterline
29:4,5,7 31:4
wave
12:2
way
2:9 7:13 13:25 15:19 17:2 20:24 33:4
ways
21:19
Web
22:11,13,15 32:22 32:24 33:1 35:14 35:25
week
26:23
weird
24:24
welcome
11:7,7,7 13:10 22:2
went
3:25 4:3
west
27:8
Western
13:4
we'll
12:18 16:4 17:21 20:1,3,4 21:24 23:1 23:14,21 29:8,18 31:7 32:16 33:4
we're
4:11,14 7:3,4,5,6,22 7:22 8:2,16 9:3,3,5 9:9,9,13 13:7 15:25 17:11,24 18:8 21:4 21:6,13 22:17,23 23:11,17 24:4,22 25:8,11,17,25 26:1 26:1,2,10 27:1 28:23 29:16,20 30:8 31:17,18 32:3 32:15,18,18,20 34:1 35:18 36:11 36:12,18
we've
3:9 7:13 19:7 20:6 22:11 23:15,19 26:5 33:22
WHEREOF
37:20
wholly
29:11
wide
25:9 30:7
Wildlife
31:11,22 33:24
Wilhite
12:7
William
2:7
wine
32:12
WITNESS
37:20
witnesses
37:6
women's
11:13
wonderful
12:6 33:4
wondering
33:9
word
35:17
work
4:13 5:8 7:1 8:21 11:20 18:23 21:4 28:23
working
5:10,11 6:8 9:4,9,16 17:4,21 23:8,11 32:18,19,20
writing
12:19 15:7 31:17
written
35:3
wrong
5:19

X

X
37:15

Y

year
21:6 26:15
years
17:1 28:19
yesterday
5:16
young
12:9 34:25
Youngbear
16:10,15,17
youths
7:4

1

1
17:25 21:13 23:22 26:4
106
32:9
12
14:9
15
27:22
1500
19:15
1508
19:16
156942
1:23
175
30:10
1970s
32:12

2

2,000
36:9
20
28:20
200
27:5
200-foot
30:7
2006
33:21
2008
33:21
2010
23:9 31:9,12
2011
1:19 2:1 18:4
24
1:19 2:1 32:15
25
26:6,14
250
27:5
26
31:15

3

3
20:8
3.9
25:6
30
17:1 25:1 27:3 29:10
30-day
20:11
30-foot
28:20
30-year
26:6
300
31:14
350
17:10 25:15 26:13 28:10

4

4
18:3
40
25:1 27:4 31:15
42
14:1
430
19:15
45-day
19:10

5

5,000-foot
25:9
50
13:18
500
29:16 30:9 31:14,16
55
34:17
57
36:8

6

6,000
31:25
60
13:18
64
29:17,17

7

7
31:21 35:4
75
27:12

8

80
29:18 30:14
849
1:22 37:25

9

9
15:15
90
31:18

This page intended to be blank.

APPENDIX E: SCOPING MEETING DISPLAYS AND PLACARDS

This page intended to be blank.

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
SOUTHERN PAIUTE AGENCY
P.O. Box 720
St. George, Utah 84771

Date: February 23 & 24, 2011

Location: Moapa River Indian Reservation / Town Hall
Offices of the Bureau of Land Management

Welcome to

The Scoping Meeting for NEPA Environmental Impact Statement for the Proposed K Road/Moapa Band of Paiute Indians Photovoltaic Solar Facility, Clark County, NV.

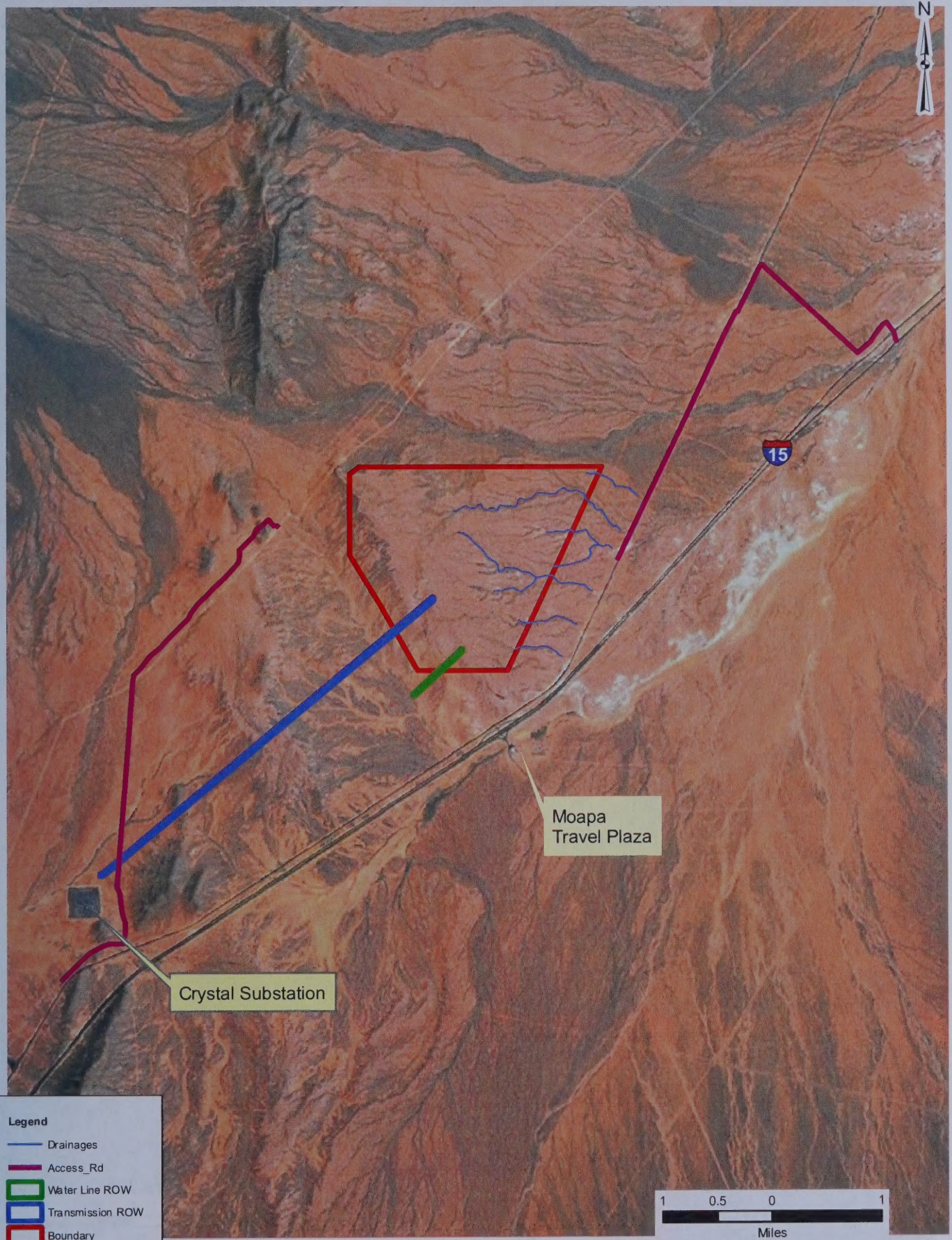
Agenda of Today's Meeting:

- **Opening Prayer**
- **Welcome by Chairman Anderson** – Moapa Band of Paiute Indians
- **Opening Remarks by Kellie Youngbear** – Southern Paiute Agency
- **The NEPA Process** – How it Works –Amy Heuslein (BIA)
- **Presentation of Proposed Project** – Chad Martin (ARCADIS)
- **Public Comment Period** – Amy Heuslein / Chad Martin (Facilitators)
- **Written Comments Protocol**
- **Open Floor Exhibits and Discussion**

More Information at our website: http://projects2.pirnie.com/MoapaSolar/

Map Document:Austin/6923001/GIS/MXD/BLM Lands Figure 1

MALCOLM PIRNIE	K Road Power San Diego, California K Road Moapa Solar Project	Moapa River Indian Reservation USGS Topographical Map	MALCOLM PIRNIE, INC. February 2011 FIGURE 2



Map Document:Austin\6923001\GIS\MXD\BLM Lands Figure 1

MALCOLM PIRNIE

K Road Power
San Diego, California

K Road Moapa Solar Project

Moapa River Indian Reservation

Aerial Photograph Map

MALCOLM PIRNIE, INC.

February 2011

FIGURE 3

Map Document:Austin/6923001/GIS/MXD/BLM Lands Figure 1

MALCOLM PIRNIE

K Road Power
San Diego, California

K Road Moapa Solar Project

Moapa River Indian Reservation

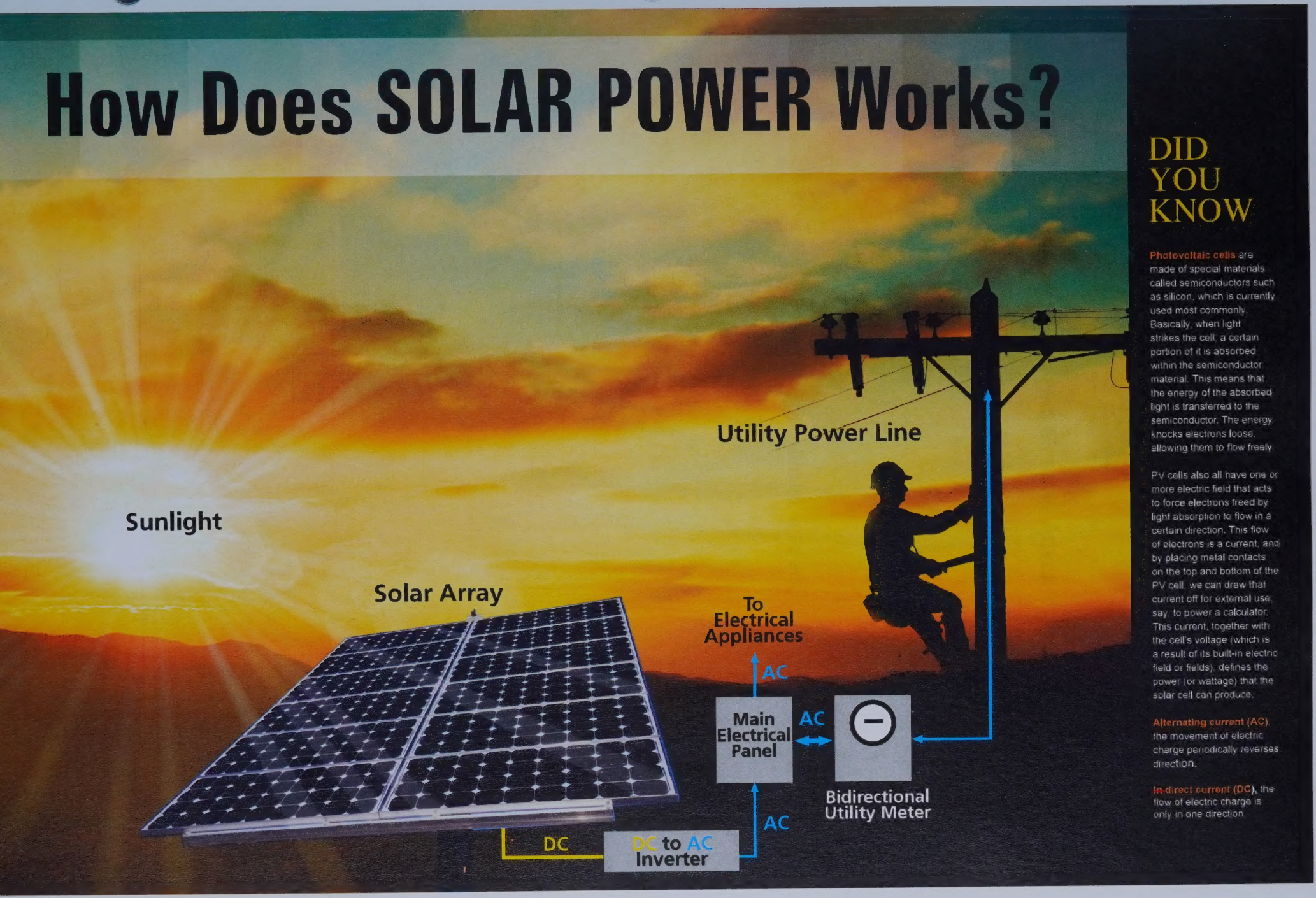
Land Ownership Map

MALCOLM PIRNIE, INC.

February 2011

FIGURE 1

How Does SOLAR POWER Works?



DID YOU KNOW

Photovoltaic cells are made of special materials called semiconductors such as silicon, which is currently used most commonly. Basically, when light strikes the cell, a certain portion of it is absorbed within the semiconductor material. This means that the energy of the absorbed light is transferred to the semiconductor. The energy knocks electrons loose, allowing them to flow freely.

PV cells also all have one or more electric field that acts to force electrons freed by light absorption to flow in a certain direction. This flow of electrons is a current, and by placing metal contacts on the top and bottom of the PV cell, we can draw that current off for external use, say, to power a calculator. This current, together with the cell's voltage (which is a result of its built-in electric field or fields), defines the power (or wattage) that the solar cell can produce.

Alternating current (AC), the movement of electric charge periodically reverses direction.

In direct current (DC), the flow of electric charge is only in one direction.

This page intended to be blank.

APPENDIX F: SCOPING MEETING ADVERTISEMENTS

This page intended to be blank.

Public Meeting Announcement

U.S. Bureau of Indian Affairs (BIA) and the Moapa Band of Paiute Indians invite you to attend a scoping meeting to help identify the range or scope of issues related to the proposed Moapa Band of Paiute Indians Solar Generation Facility. The issues identified during the scoping process will be considered and addressed during preparation of the Environmental Impact Statement.

Please plan to attend one of the following meetings:

Wednesday, February 23, 2011
Moapa River Indian Reservation Tribal Hall,
One Lincoln Street, Moapa, NV 89025-0340

Thursday, February 24, 2011
U.S. Land Management Bureau (BLM) Conference Room,
4701 N. Torrey Pines Dr. Las Vegas, NV 89130

All meetings will be held between 6:00 pm and 8:00 pm with a brief presentation at 6:15 pm. Light refreshments will be served.

The proposed Moapa Band of Paiute Indians Solar Generation Facility will be built in phases of 50 to 100 MW each to meet the needs of offtakers or utilities, up to a total of 350 MW. The proposed project will be located on approximately 2,000 acres within the Moapa River Indian Reservation in Clark County, Nevada, approximately one mile west of Interstate 15 and approximately 30 miles northeast of Las Vegas. The project would also include the construction of a power transmission line across BLM property to reach the Crystal Substation operated by NV Energy.

For more information on how to participate, email Ms. Amy Heuslein, Regional Environmental Protection Officer, at amy.heuslein@bia.gov (602.379.6750) or Mr. Paul Schlafly, Natural Resource Officer, at *paul.schlafly@bia.gov (435.674.9720).*

This page intended to be blank.

APPENDIX G: SCOPING MEETING MAILER

This page intended to be blank.

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
SOUTHERN PAIUTE AGENCY
P.O. Box 720
180 North 200 East Suite # 111
St. George, Utah 84771
Phone (435) 674-9720

IN REPLY REFER TO:
Superintendent

TAKE PRIDE IN AMERICA

DEPARTMENT OF THE INTERIOR
Bureau of Indian Affairs

Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Moapa Band of Paiute Indians Solar Generation Facility, Clark County, NV.

AGENCY: Bureau of Indian Affairs, Interior

ACTION: Notice

SUMMARY: This notice advises the public that the Bureau of Indian Affairs (BIA), as Lead Agency, with the Moapa Band of Paiute Indians (Tribe), the Bureau of Land Management (BLM), the Environmental Protection Agency (EPA), and the Army Corps of Engineers (Corps), as cooperating agencies, intend to gather information necessary for preparing an Environmental Impact Statement (EIS) for the proposed Moapa Band of Paiute Indians Solar Generation Facility on the Moapa River Indian Reservation, Clark County, Nevada. This notice also announces one public scoping meeting at the Moapa River Indian Reservation and one public scoping meeting at the BLM North Las Vegas Office to identify potential issues and content for inclusion in the EIS.

DATES: In order to be fully considered at this stage of the environmental review process, written comments on the scope and implementation of this proposal must be delivered to the address(es) provided below by March 7, 2011. The Moapa River Indian Reservation public scoping meeting will be held on February 23, 2011; the BLM North Las Vegas Office public scoping meeting will be held on February 24, 2011.

ADDRESSES: You may mail, hand deliver or telefax written comments to either Ms. Amy Heuslein, Regional Environmental Protection Officer, BIA Western Regional Office Branch of Environmental Quality Services, 2600 North Central Avenue, 4th Floor Mail Room, Phoenix, AZ 85004-3008; telephone: (602) 379-6750; fax (602) 379-3833; email: amy.heuslein@bia.gov; or Mr. Paul Schlafly, Natural Resource Officer, BIA Southern Paiute Agency, 180 N. 200 E., Suite 111 or P.O. Box 720, St. George, UT 84771; telephone: (435) 674-9720; fax: (435) 674-9714; email: paul.schlafly@bia.gov. Please include your name, return address and the caption "EIS Scoping Comments, K Road and Moapa Band of Paiute Indians Solar Facility," on the first page of your written comments. Individual respondents may request confidentiality; however, anonymous comments will not be considered.

Both public meetings will be held at 6:00pm. The February 23rd Moapa River Indian Reservation public scoping meeting will be held in the Tribal Hall on the Moapa River Indian Reservation, 1 Lincoln Street, Moapa, NV 89025. The February 24th BLM North Las Vegas Office public scoping meeting will be held in the conference room of the BLM office at 4701 North Torrey Pines, Las Vegas, NV 89130. Each meeting is anticipated to last approximately two hours, with light refreshments provided.

SUPPLEMENTARY INFORMATION: The proposed Federal action, taken under 25 U.S.C. 415, is the BIA approval of a solar energy ground lease and associated agreements entered into by the Moapa Band of Paiute Indians with K Road Moapa Solar LLC (K Road), and associated approval of rights-of-way and easements, for K Road to construct and operate a solar photovoltaic facility with the potential to produce up to 350 megawatts (MW). The facility would be located entirely on Moapa tribal lands. The Moapa Band of Paiute Indians may use this EIS to make decisions under the Tribal Environmental Policy Ordinance. The BLM may use this EIS to support a decision for a proposed approximately 0.5 mile right-of-way across Federal public lands adjoining the Moapa River Indian Reservation. The right-of-way may be used to link the proposed solar generation facility to an existing substation on a transmission line with a rating up to 500 kilovolts. The United States Fish and Wildlife Service may use this EIS to support its decision under the Endangered Species Act.

AUTHORITY: This notice is published in accordance with section 1503.1 of the Council on Environmental Quality Regulations (40 CFR parts 1500 through 1508) and Section 46.305 of the Department of Interior Regulations (43 CFR part 46), implementing the procedural requirements of the National Environmental Policy Act, as amended (42 U.S.C. 4321 *et seq.*), and is in the exercise of authority delegated to the Assistant Secretary – Indian Affairs, by part 209 of the Departmental Manual.

Date: 2/15/11

Ms. Kellie Y. Youngbear
Superintendent, Southern Paiute Agency
Bureau of Indian Affairs

This page intended to be blank.

K ROAD AND MOAPA BAND OF PAIUTE INDIANS
PHOTOVOLTAIC SOLAR FACILITY

ENVIRONMENTAL IMPACT STATEMENT

PUBLIC MEETING REPORT

JANUARY 2012

PREPARED FOR:
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 NORTH CENTRAL AVENUE
PHOENIX, AZ 85004
AND
BUREAU OF INDIAN AFFAIRS
SOUTHERN PAIUTE AGENCY
P.O. Box 720
ST. GEORGE, UTAH 84771

Prepared By:
ARCADIS-US
100 Congress Avenue
Suite 1485
Austin, Texas 78701

This page intended to be blank.

Contents

1. Introduction **1-1**

1.1. Purpose 1-1

1.2. Document Organization 1-2

2. Description of Formal Public Meetings **2-1**

2.1. Meeting Set-Up 2-1

2.2. Meeting Advertising 2-2

2.3. Methods for Public Comment 2-3

3. Public Meeting Comments Analysis **3-1**

3.1. Comment Processing 3-1

3.2. Comment Analysis 3-1

3.3. Comment Disposition 3-2

3.3.1. Summary of Comments from Letters and Forms 3-2

3.3.2. Summary of Informal Comments from Notes Taken During the Public Meetings 3-2

3.3.3. Informal Comment Summary 3-3

3.3.3.1. Process 3-3

3.3.3.2. Purpose and Need 3-3

3.3.3.3. Impact Analysis 3-3

List of Tables

Table 2-1: Formal Public Meeting Dates, Times, Locations and Number of Attendees. 2-1

Table 2-2: Advertising of Formal Public Meetings 2-2

Table 3-1: Comment Type Codes 3-1

Table 3-2: Resource Issue Identification 3-1

Table 3-3: Comment Disposition 3-2

Appendices

A. Meeting Attendees
B. Public Meeting Pamphlet and Comment Card
C. Comment Summary Table and Formal Comment Letters
D. Public Meeting Transcripts
E. Public Meeting Displays and Placards
F. Public Meeting Advertisements
G. Public Meeting Notice Mailer and Draft EIS Notice of Availability

Acronyms Used in the Report

BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
Corps	Army Corps of Engineers
DEIS	Draft Environmental Impact Statement
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
kV	Kilovolt
K Road	K Road Moapa Solar LLC
MW	Megawatt
NEPA	National Environmental Policy Act
Proposed Action	Solar Generating Facility
PV	Photovoltaic
ROW	Right of way
Tribe	Moapa Band of Paiute Indians
USFWS	United States Fish and Wildlife Service

This page intended to be blank.

1. Introduction

The Bureau of Indian Affairs (BIA), in cooperation with the Moapa Band of Paiute Indians (Tribe), the Bureau of Land Management (BLM), the U.S. Environmental Protection Agency (EPA), and the Army Corps of Engineers (Corps), as cooperating agencies, have prepared a draft environmental impact statement (EIS) for the proposed Moapa Band of Paiute Indians Solar Generation Facility (Proposed Action) on the Moapa River Indian Reservation in Clark County, Nevada. The Proposed Action evaluated in the EIS consists of BIA approval of a solar energy ground lease and associated agreements entered into by the Moapa Band of Paiute Indians with K Road Moapa Solar LLC (K Road), and associated approval of rights-of-way (ROW) and easements, for K Road to construct and operate an up-to 350 megawatt (MW) solar photovoltaic (PV) electricity generating facility located entirely on Moapa tribal lands. The Moapa Band of Paiute Indians will use this EIS to make decisions under the Tribal Environmental Policy Ordinance. The BLM will use this EIS to support a decision for a proposed approximately 0.5 mile ROW across Federal public lands adjoining the Moapa River Indian Reservation. The ROW will be used to link the proposed solar generation facility to an existing substation on a transmission line with a rating up to 500 kilovolts (kV). The U.S. Fish and Wildlife Service (USFWS) will use this EIS to support its decisions under the Endangered Species Act.

The BIA held public meetings on December 14 and 15, 2011 for the draft EIS at the Moapa River Indian Reservation and at the BLM Las Vegas, Nevada offices, respectively. The purpose of the public meetings was to provide information on the project planning process to members of the tribe and to the general public and to provide an opportunity for attendees to ask questions of the BIA, the cooperating agencies and the environmental specialists involved with the project. The meetings also provided an opportunity for attendees to express their comments and concerns of the Proposed Action.

1.1. Purpose

This public meeting report summarizes public comments, provides a list of issues and/or concerns, and is intended to aid in determining the appropriate scope of environmental analysis from the comments received in response to the public meetings. All issues that are substantive and within the scope of the BIA's decisions will be addressed in the final EIS.

1.2. Document Organization

This document contains summary descriptions of the following:

- Public meetings, including advertising prior to the meetings
- Opportunities for public comment on the draft EIS during the comment period
- Comments received during the comment period (November 25, 2011 to January 9, 2012)

As part of the National Environmental Policy Act (NEPA) process all comments are given equal consideration, regardless of the method of their transmittal.

2. Description of Formal Public Meetings

The BIA held two public meetings for the K Road Moapa Band of Paiute Indians Solar Generation Facility that were held near the Proposed Project location as discussed previously. Meeting dates, locations, and numbers of attendees are provided in Table 2-1. Public meeting attendees are listed in Appendix A.

Table 2-1:
Formal Public Meeting Dates, Times, Locations and Number of Attendees

Date	Time	City, State	Address	Number of Attendees
Wednesday, December 14, 2011	5:30 – 7:30 pm	Moapa Town, Nevada	Moapa River Indian Reservation, Tribal Hall 1 Lincoln Street	25
Thursday, December 15, 2011	5:30 – 7:30 pm	Las Vegas, Nevada	BLM, Conference Room North Las Vegas Office, 4701 North Torrey Pines	24

2.1. Meeting Set-Up

The public meetings were a combination of open house and formal presentation. Attendees were greeted at the entrance and asked to sign in (see Appendix A for copies of sign in sheets). Attendees were given a comment card and a pamphlet that contained illustrations and literature about the proposed project (Appendix B). Attendees helped themselves to light refreshments while viewing the posters and placards. Attendees engaged in conversations and were introduced to the agencies representatives prior to the formal presentations.

Following an open house of approximately 30 minutes, attendees were seated and the presentation began. Both public meetings followed the same agenda with the exception of Jodi Gillette, Assistant Secretary with the Department of the Interior, introduced herself at the December 14th meeting at the Tribal Hall and Mark Chandler with the BLM did a brief introduction at this meeting as well. The program opened with a welcome from Chairman William Anderson of the Moapa Band of Paiute Indians. Chairman Anderson gave a brief history of the Reservation, what he envisions will be the future of his people and the importance of the Proposed Action to the community of Paiute Indians. Chairman Anderson then turned the presentation over to the BIA Regional Environmental Protection Officer, Amy Heuslein, who proceeded to introduce Ms. Kellie

Youngbear, the Superintendent of the Southern Paiute Agency. Ms. Youngbear explained the leasing agreement and terms. Following Ms. Youngbear, Ms. Heuslein resumed her presentation explaining the purpose and need of the EIS, EIS schedule and the NEPA process. ARCADIS-US Project Manager, Chad Martin of the EIS consultant team, presented the Proposed Action with an overview of the technical aspects and the environmental issues addressed in the Draft EIS (DEIS). Following the presentation, Mr. Martin concluded the meeting with a public comment session inviting the public to provide verbal comments on the Proposed Action. A court reporter was present at both public meetings to record each meeting verbatim and any public comments expressed. A summary of the comments is provided in Appendix C and the public meeting transcripts are provided in Appendix D.

Seven informational display boards were arranged in stations (see Appendix E) for each meeting:

1. Agenda placard of the evening events
2. USGS topographical map of Moapa River Indian Reservation, Proposed Project site boundary, access roads, water line ROW and transmission ROW
3. Draft aerial perspective of landscape after construction using Google Earth display
4. Project site map of existing and proposed ROWs on the Reservation
5. Viewshed analysis map from Project area
6. One MW cluster perspective display
7. "How Does Solar Power Work" informational poster

2.2. Meeting Advertising

The public meetings were advertised in a variety of formats (Table 2-2; Appendices F and G) at least seven days prior to the scheduled dates and at least 15 days after the Notice of Availability was published in the Federal Register. In each advertisement, the purpose of the public meetings was explained as well as the schedule for the comment period, additional ways to comment, dates, time and locations of meetings, and methods of obtaining further information.

Table 2-2:
Advertising of Formal Public Meetings

Newspaper Advertisements
A public notice/news release was published in the Las Vegas Review Journal on December 7, 2011; and the Moapa Valley Progress on November 30, 2011 and December 7, 2011.
Draft EIS and Public Meeting Notice Mailer
Draft EIS Availability and public meeting notice mailers were sent on November 28, 2011 to those on the project mailing list (see Appendix G).

Project Website
BIA - Public website may be accessed by any one at any time during the comment period and has a comment section to submit comments. http://projects2.pirnie.com/MoapaSolar/

2.3. Methods for Public Comment

Members of the public were informed of several methods for providing comments:

- Attendees of the public meetings could voice their comments following the presentation at the public meeting and have their comments recorded by the court reporter.
- Attendees of the public meetings could speak directly to the court reporter at the public meetings and have their comments recorded in private.
- Comments could be recorded on comment cards provided at the public meetings (see Appendix B) and submitted at the public meetings.
- The comment forms provided at the public meetings could be taken home and mailed in at a later date via the U.S. Postal Service to Bureau of Indian Affairs, Southern Paiute Agency, P.O. Box 720, St George, Utah, 84771.
- Individual letters could be hand delivered or mailed via the U.S. Postal Service to Mr. Paul Schlafly, Natural Resource Officer, Bureau of Indian Affairs, Southern Paiute Agency, P.O. Box 720, St George, Utah, 84771; or to Ms. Amy Heuslein, Regional Environmental Protection Officer, BIA Western Regional Office Branch of Environmental Quality Services, 2600 North Central Avenue, 4th Floor Mail Room, Phoenix, AZ 85004-3008.
- Comments could be sent via email to either Mr. Paul Schlafly, Natural Resources Officer of the BIA Southern Paiute Agency at paul.schlafly@bia.gov or Ms. Amy Heuslein, Regional Environmental Protection Officer, BIA Western Office Branch at amy.heuslein@bia.gov.
- Faxed comments could be sent to the attention of Mr. Paul Schlafly at 435-674-9714 or Ms. Amy Heuslein at 602-379-3833.
- Comments could be submitted via "submit comment" tab on the BIA project website at http://projects2.pirnie.com/MoapaSolar/

This page intended to be blank.

3. Public Meeting Comments Analysis

3.1. Comment Processing

Comment letters and/or forms were numbered sequentially (beginning with 1) and labeled with a comment type code indicating the entity from which it was received (Table 3-1).

Table 3-1:
Comment Type Codes

Type	Type Code
Individual	I
Government Agency	G
Non-governmental Organization (special interest)	O
Business	B
Tribe	T
State	S

This combination of comment type code and number assignment to each letter provides a unique identifier for each letter in which to cross-reference comments received.

3.2. Comment Analysis

Following the labeling of alphanumeric identifiers, individual comments of all letters were reviewed. Letters may or may not have contained multiple comments. Comments were categorized by topics and assigned codes corresponding to their respective resource issue (Table 3-2). This type of analysis allows for specific comments to be evaluated and grouped by general topic or issue.

Table 3-2:
Resource Issue Identification

Resource Code	Resource Issue
ALT	Alternative
AQ	Air Quality
CCE	Climate Change Effects
CUM	Cumulative Impacts
HAB	Habitat
HAZ	Hazardous Materials / Waste Management
HYD	Hydrology
MS	Miscellaneous
PN	Purpose and Need
PV	Photovoltaic
VEG	Vegetation

WLD	Wildlife

3.3. Comment Disposition

Following categorization and coding of resource issues, comments were then coded according to their disposition. The disposition of a comment refers to the way the comment would be addressed in the final EIS. Comments fell into one of five categories (Table 3-3).

Table 3-3:
Comment Disposition

Disposition Code	Comment Disposition	Explanation
PRO	Process	Identifies certain elements of the NEPA process that must be documented and disclosed in the EIS, but does not require specific resource analysis in the EIS.
PN	Purpose and Need	Requires additional documentation or clarification of the project Purpose and Need.
ALT	Alternatives Development	Requires analysis of existing alternatives or consideration of new alternatives.
IA	Impact Analysis	Requires EIS analysis of impacts to specific resources of concern.
OOS	Out of Scope	Comments receiving the disposition code OOS are not addressed in the EIS. These are comments that are not within the scope of the BIA's decision regarding the proposed solar facility.

3.3.1. Summary of Comments from Letters and Forms

Table 3-3 describes the four broad categories that each substantive comment was designated to: Process, Purpose and Need, Alternatives Development, and Impacts Analysis (including resource-specific concerns and cumulative impacts). A detailed record of all formal letters and comments is arranged by category and can be found in Appendix C.

3.3.2. Summary of Informal Comments from Notes Taken During the Public Meetings

Comments received during the public meeting from members of the public and agency officials were noted by the court reporter during the meeting. These comments are summarized in section 3.3.3 Informal Comment Summary.

3.3.3. Informal Comment Summary

3.3.3.1. Process

It was clarified that the presentation given during the public meeting will be made available.
It was clarified that there will be a 30 day comment period for the Desert Tortoise Translocation Plan and the Avian and Bat Plan (Bird and Bat Conservation Strategy).

3.3.3.2. Purpose and Need

No concerns expressed.

3.3.3.3. Impact Analysis

Vegetation
Concern was expressed about plant surveys conducted, primarily the Beaver Dam Breadroot (*Pediomelum castoreum*) (state-listed rare plant).
Concern regarding the need to look beyond federally listed plants and trying to mitigate impacts on plants through design and micro detail shifting of infrastructure was expressed.

Wildlife
Concern was expressed regarding information on the Gila monster (*Heloderma suspectum*).
Concern was expressed about euthanizing tortoises that do not need to be euthanized because they exhibit antibody reactions rather than symptoms of disease during health assessments.

General
Concern was expressed regarding having a transfer station (fenced-in compound with either recyclable bins or the closed lids so you can have vector controls of predators from crows to coyotes). This will be in the Construction Implementation Plan. *G*
Concern was expressed about having seasonal speed limits on the access road, as well as having escorts regulating people coming in.
Paving the road was also an expressed concern regarding dust and visibility, primarily for desert tortoises.
Concern was expressed if aircraft will be affected by the Project and if aircraft are allowed to fly over the Reservation.

3.3.3.4 Out of Scope

A suggestion was made that the more time allowed to comment on documents such as on the draft EIS, translocation plan, etc., the less controversy should occur.
A question was asked who the power purchase agreement was with.

This page intended to be blank.

APPENDIX A:

MEETING ATTENDEES

This page intended to be blank.

Table A-1. Public Meetings Attendees

Name	Address	Email Address	Organization/Company
Thursday, December 14, 2011 - Tribal Hall on the Moapa River Indian Reservation			
Dave Sundtrum	One Embarcadero Center, Ste 260 San Fransisco, California 94111	davids@kroadpower.com	K Road
Keith Heffelfinger	One Embarcadero Center, Ste 260 San Fransisco, California 94111	keithh@kroadpower.com	K Road
Dorothy Hallock	517 W University Drive Tempe, Arizona 85281	halgros@hallockgross.com	BIA Consultant
Allen W. Gross	517 University Drive Tempe, Arizona 85281	halgros@hallockgross.com	BIA
Tony Dvorak	15999 S. Woodson Drive San Diego, California	ajdvorak@gmail.com	Argonna National Lab
Gary Marmer	4962 E Via Montoya Drive Phoenix, Arizona 85030	gjmarmer@cox.net	Argonna National Lab
Marcia Bushhead			
Paul Schlafly	BIA Southern Paiute Agency St. George, Utah 84771	paul.schlafly@bia.gov	BIA-SPA
Mark Chandler	4701 North Torrey Pines Las Vegas, Nevada 89081		BLM
Shirley Anderson	21 Bowlin Street Moapa, Nevada 89025	sanderson@mvdsl.com	MBOP
Christina Varela	Southern Paiute Agency	christina.varela@bia.gov	BIA
Mike Donahue	Overton, Nevada		Moapa Valley Progress
Kellie Youngbear	BIA Southern Paiute Agency St. George, Utah 84771	kellie.youngbear@bia.gov	BIA-SPA
Bob Ross	Las Vegas, Nevada	bross@blm.gov	BLM
Jodi Gillette	Washington D.C.		DOI Assist. Secy-Indian Affairs
Tony Walters	Washington D.C.	anthony.walters@bia.gov	DOI/ASIA
Tamera Dawes	2600 North Central Avenue Phoenix, Arizona 85004	tamara.dawes@bia.gov	BIA-WRO
Vickie Simmons	P.O. Box 93 Moapa, Nevada 89025	vickiesimmons@yahoo.com	Tribal Member - MBOP

Name	Address	Email Address	Organization/Company
Vinny Spotleson	708 S. 6th Street Las Vegas, Nevada 89101	vinny.spotleson@sierraclub.org	Sierra Club
Jane Feldman		feldman.jane@gmail.com	Sierra Club
Rocky Fernandez	817 S. Main St. Las Vegas, Nevada 89101	rfernandez@cleanenergyprojectnv.org	Clean Energy Project
Calvin Meyers		southernpaiute@gmail.com	MBOP-Tribal Member
Darren Daboda	PO Box 340 Moapa, Nevada 89025	d_daboda@yahoo.com	MBOP-Env. Cooridinator
Iris Daboda	Box 112 Moapa, Nevada 89025		MBOP-Member
Tom Tureen	2247 Clay San Fransisco, California 94115	thomast@kroadpower.com	K Road
Friday, December 15, 2011 - Conference Room , BLM office.			
Garry Cantley	2600 North Central Avenue Phoenix, Arizona 85004	Garry.Cantley@bia.gov	BIA-WRO
Keith Heffelfinger	Phoenix, Arizona	keithh@kroadpower.com	K Road Power
Paul Schlafly	BIA Southern Paiute Agency St. George, Utah 84771	paul.schlafly@bia.gov	BIA-SPA
Gary Marmer	4962 E Via Montoya Drive Phoenix, Arizona 85030	gjmarmer@cox.net	Argonna National Lab
Amy Heuslein	2600 North Central Avenue Phoenix, Arizona 85004	amy.heuslein@bia.gov	BIA
Christina Varela	St. George, Utah 84771	christina.varela@bia.gov	BIA
Ryan Henning	Broomfield, Colorado	ryan.henning@res_america.com	RES Americas
Rob Mrowka	4261 Lily Glen Court N Las Vegas, Nevada 89032	rmrowka@biologicaldiversity.org	Center for Biological Diversity
Kellie Youngbear	180 North 200 E St. George, Utah 84771	kellie.youngbear@bia.gov	BIA
Bob Ross	Las Vegas, Nevada		BLM
Jane Feldman		feldman.jane@gmail.com	Sierra Club
Vanessa Hice	Las Vegas, Nevada		BLM
Michelle Lieber	Las Vegas, Nevada		BLM

Name	Address	Email Address	Organization/Company
Vinny Spotleson	708 S. 6th Street Las Vegas, Nevada 89101	vinny.spotleson@sierraclub.org	Sierra Club
Mark Spenser	4701 North Torrey Pines Las Vegas, Nevada 89081	mark.spencer@blm.gov	BLM
Vernon Lee	Box 773 Moapa, Nevada 89025		Moapa Band Paiutes
Allen W. Gross	517 W University Drive Tempe, Arizona 85281	halgros@hallockgross.com	Hallock and Gross
Dorothy Hallock	517 W University Drive Tempe, Arizona 85281	halgros@hallockgross.com	BIA Consultant
Tom Tureen	2247 Clay San Fransisco, California 94115	thomast@kroadpower.com	K Road
Brenda Wilhight	4701 N Torrey Pines Drive Las Vegas, NV 89081	brenda.wilhight@blm.gov	BLM
Judy Bundorf	1800 Sterling Pt Court Henderson, Nevada 89012	jbundorf@cox.net	individual
Wayne Bundorf	1800 Sterling Pt Court Henderson, Nevada 89012		individual
Jennifer Carleton	BHFS	jcarleton@bhfs.com	BHFS
John Hiatt	8180 Placid Street Las Vegas, Nevada 84123	hjhiatt@umv.net	RRAS

This page intended to be blank.

Moapa Band of Paiute Indians Photovoltaic Solar Facility, Public Meetings

BUREAU OF INDIAN AFFAIRS (BIA)
Moapa River Indian Reservation Tribal Hall
One Lincoln Street
Moapa, Nevada 89025-0340
Wednesday, December 14, 2011 (5:30-7:30pm)

Please Sign In

Name	Address	E-mail	Organization/Company
Dave Sindstrom	One Embarcadero center ste 260 San Francisco, CA 94111	DavidS@Kroadpower.com	KROAD
Keith Heffelfinger	Same as above	KeithH@Kroadpower.com	KROAD
Dorothy Hallock	57th University Place	halgros@hallockgroup.com	BIA consultant
Allen W Gross	"	"	"
Tony Dvorak	15999 S. Woodson Dr., Sunland	ajdvorak@gmail.com	Argonne Natl Lab
GARY MARMER	4962 E VIA MONTOYA DR PHOENIX AZ 85050	GJMARMER@COX.NET	ARGONNE NAT'L LAB
Marcia Bushhead	~~[illegible]~~ "	"	"
PAUL SCHLAFLY	BIA-SPA/St. George	paulschlafly@bia.gov	BIA
Mark Chambers	BCM-4101 Nellis		Bureau of Land Mgmt
Shirley Anderson	Moapa NV		Moapa

Moapa Band of Paiute Indians Photovoltaic Solar Facility, Public Meetings

BUREAU OF INDIAN AFFAIRS (BIA)
Moapa River Indian Reservation Tribal Hall
One Lincoln Street
Moapa, Nevada 89025-0340
Wednesday, December 14, 2011 (5:30-7:30pm)

Please Sign In

Name	Address	E-mail	Organization/Company
Christina Varela	Southern Paiute Dam	Christina.Varela@bia.gov	BIA
MIKE DONAHUE	OVERTON		MV PROGRESS
Kellie Youngbear	Southern Paiute Agency	kellie.youngbear@bia.gov	BIA
Bob Ross	Las Vegas	bross@blm.gov	BLM
Jodi Gillette	Washington DC		DOI Assistant Secretary - Indian Affairs
Tony Walters	Washington DC	Anthony.Walters@bia.gov	DOI | ASIA
Tomas Davies	WRO - BIA	tomas.Davies@bia.gov	WRO BIA
Vickie Simmons	Moapa Band of Paiutes	simmonsvickie@ymail.com	Tribal Member
Vinny Spotleson	708 S. 6th street Las Vegas, NV 89101	Vinny.spotleson@sierraclub.org	Sierra Club
Jane Feldman		feldman.jane@gmail.com	Sierra Club

Moapa Band of Paiute Indians Photovoltaic Solar Facility, Public Meetings
BUREAU OF INDIAN AFFAIRS (BIA)
Moapa River Indian Reservation Tribal Hall
One Lincoln Street
Moapa, Nevada 89025-0340
Wednesday, December 14, 2011 (5:30-7:30pm)

Please Sign In

Name	Address	E-mail	Organization/Company
Rocky Fernandez	817 S. Main St. Las Vegas, NV 89101	rfernandez@cleanenergyprojectnv.org	Clean Energy Project
Calvin Meyers		southernpaiute@gmail.com	Moapa Band of Paiute Tribal member
Darren Daboda	PO Box 340 Moapa, NV 89025	d_daboda@yahoo.com	MBOP - ENV. Coordinator
Iris Daboda	Box 117 MOAPA, NV 89025		member - MBOP
Tom Turcen	2247 CLAY SAN FRANCISCO, CA 94115	thomas+@kroadpower.com	K Road

Moapa Band of Paiute Indians Photovoltaic Solar Facility, Public Meetings

BUREAU OF INDIAN AFFAIRS (BIA)
U.S. Bureau of Land Management (BLM) Conference Room
4701 N. Torrey Pines Dr.
Las Vegas, Nevada 89130
Thursday, December 15, 2011 (5:30-7:30pm)

Please Sign In

Name	Address	E-mail	Organization/Company
Gary Cantley	PHX, AZ		BIA
Keith Heffelfinger	PHX, AZ	KeithH@Kroadpower.com	K ROAD
PAUL SCALAPLY	St. George, UT		BIA
GARY MARMER	PHX AZ	GJMARMER@COX.NET	ARGONNE NAT'L LAB
Amy Heuslein	Phoenix, AZ	amy.heuslein@bia.gov	BIA
Christina Varela	St. George UT	Christina.Varela@bia.gov	BIA
Ryan Henning	Broomfield CO	Ryan.Henning@res-americas.com	RES Americas
BOB MROWKA	N. LAS VEGAS	RMROWKA@BIOLOGICALDIVERSITY.ORG	CBD
Kellie Youngbear	St. George UT		BIA
BOB ROSS	Las Vegas		BLM

Moapa Band of Paiute Indians Photovoltaic Solar Facility, Public Meetings

BUREAU OF INDIAN AFFAIRS (BIA)
U.S. Bureau of Land Management (BLM) Conference Room
4701 N. Torrey Pines Dr.
Las Vegas, Nevada 89130
Thursday, December 15, 2011 (5:30-7:30pm)

Please Sign In

Name	Address	E-mail	Organization/Company
Jane Feldman	LV	feldman.jane@gmail.com	Sierra Club
VANESSA Hice	LAS Vegas		BLM
Michelle Leiber	BLM LV		BLM
Vinny Spotleson	708 S. 6th Street Las Vegas 89101	Vinny.Spotleson sierra Etalong	Sierra Club
M Spencer	BLM - SNDO		BLM
VERNON LEE	BOX 773 MOAPA, Nv. 89025	—	MOAPA BAND OF PAIUTES
Allen W Gross	517W University Pl	halgros@hallrockgros.com	BIA
Dorothy M Hallrock	Temp. AZ	"	"
Tom Turcon	SAN FRANCISCO, CA	thomas+@kroadpower ~~K Road Power~~	K Road
Brenda Willyott	Las Vegas		BLM

Moapa Band of Paiute Indians Photovoltaic Solar Facility, Public Meetings

BUREAU OF INDIAN AFFAIRS (BIA)

U.S. Bureau of Land Management (BLM) Conference Room

4701 N. Torrey Pines Dr.

Las Vegas, Nevada 89130

Thursday, December 15, 2011 (5:30-7:30pm)

Please Sign In

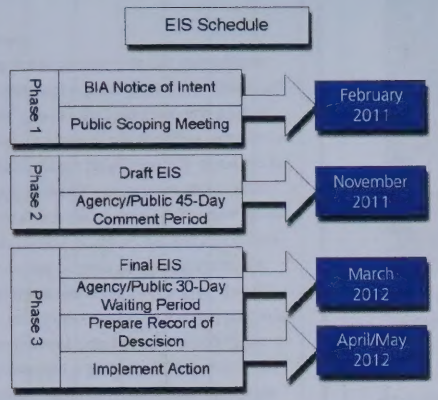
Name	Address	E-mail	Organization/Company
Judy Bundorf	1800 Sterling Pt Ct Henderson NV 89012	jbundorf@Cox.net	Self
Wayne Bundorf	" "	—	—
Jennifer Carleton	BHFS, 100 City Pkwy	jcarleton@bhfs.com	
John Hiatt	8180 Placid St Las Vegas 89123	hjhiatt@aol.com	RRAS

APPENDIX B:

PUBLIC MEETING PAMPHLET AND COMMENT CARD

This page intended to be blank.

EIS Schedule



For More Information and Contacts

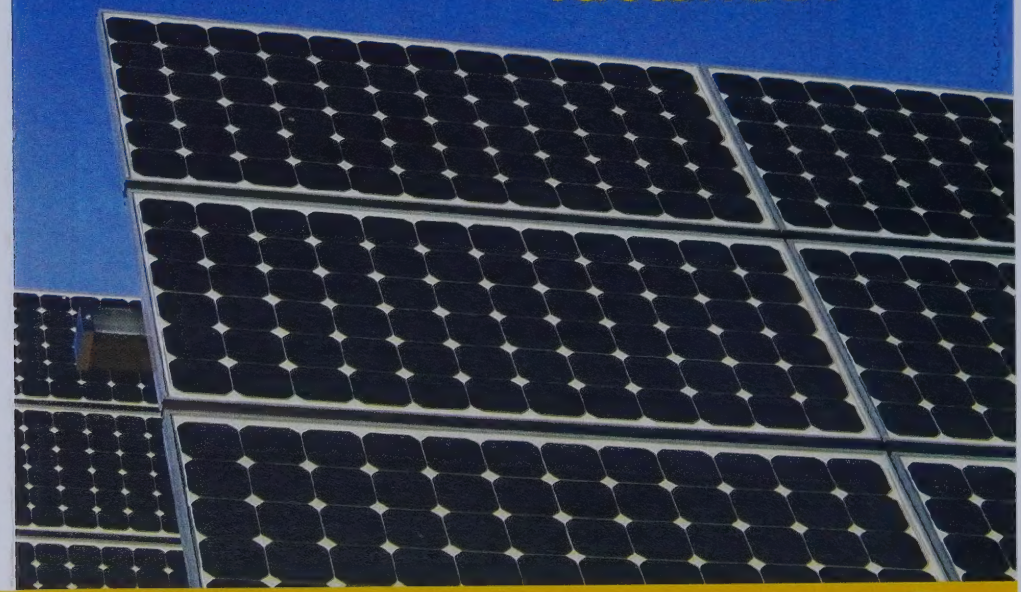
You may mail, hand carry or telefax written comments to

Ms. Amy Heuslein, Regional Environmental Protection Officer,
BIA Western Regional Office Branch of Environmental Quality Services, 2600 North Center Avenue, 4th Floor Mail Room, Phoenix, AX 85004-3008;
telephone: (602) 379-6750; fax (602) 379-3833;
email: amy.heuslein@bia.gov;
or
Mr. Paul Schlafly, Natural Resource Officer,
BIA Southern Paiute Agency, 180 N. 200 E., Suite 111 or P.O. Box 720, St. George, UT 84771;
telephone: (435) 674-9720; fax: (435) 674-9714;
email: paul.schlafly@bia.gov.

Please include your name, return address and the caption "EIS Scoping Comments, K Road and Moapa Band of Paiute Indians Solar Facility," on the first page of your written comments. Individual respondents may request confidentiality; however, anonymous comments will not be considered.

K Road Moapa Solar Project
Clark County, Nevada

information factsheet



2011

Project Information

The National Environmental Policy Act (NEPA) requires federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions. To evaluate these environmental values a detailed document known as an Environmental Impact Statement (EIS) is prepared.

The proposed Federal action, taken under 25 U.S.C. 415, is the BIA approval of a solar energy ground lease and associated agreements entered into by the Moapa Band of Paiute Indians with K Road Moapa Solar LLC (K Road), and associated approval of rights-of-way and easements, for K Road to construct and operate a solar photovoltaic facility with the potential to produce up to 350 megawatts (MW). The solar facility would be located entirely on Moapa tribal lands. The Moapa Band of Paiute Indians may use this EIS to make decisions under the Tribal Environmental Policy Ordinance. The Bureau of Land Management (BLM) may use this EIS to support a decision for a proposed approximately 0.5 mile right-of-way across Federal public lands adjoining the Moapa River Indian Reservation as well as the approval of a Plan of Development (POD) for an approximate 5.5 mile electric transmission line and improvements to an existing utility access road within the existing 4,000 foot wide utility corridor managed by the BLM. The right-of-way would be used to link the proposed solar generation facility to the existing Crystal substation on a transmission line with a rating up to 500 kilovolts. The BLM, Environmental Protection Agency (EPA), and U.S. Army Corps of Engineers (USACE) are acting as cooperating agencies. The United States Fish and Wildlife Service (USFWS) will use this EIS to support its decision under Section 7 of the Endangered Species Act.

Project Facts

- Project impact area is approximately 2,153 Acres on Moapa River Indian Reservation 30 miles north of Las Vegas
- Requires 5.5 miles of Power Transmission Lines to tie into the Electric Grid at Crystal Substation
- Requires a 1.0 mile water pipeline to supply operational water from an existing well
- Will generate up to 350 MW of clean, renewable electricity
- Will help utilities in the region meet renewable energy goals
- Will provide infrastructure via a 12kV transmission line to the Tribe-owned travel plaza on Interstate 15 for access to the electric grid and renewable energy

Resources

Threatened and Endangered Species: Desert Tortoise (Gopherus agassizii)

- Listed as a "threatened" species under the federal Endangered Species Act in 1990
- Inhabit semi-arid grasslands, gravelly desert washes and sandy canyon bottoms below 3,500 feet
- Have domed, brown shell can grow to be 9-15 inches in length, 4-6 inches high, can weigh up to 15 pounds and can live up to 100 years old
- Spend November through February in a torpid state in underground burrows and become active in the spring and fall when they will forage
- Unlawful to touch, harm, harass or collect a wild Desert Tortoise without a Permit from the US Fish and Wildlife Service (USFWS)
- The BIA and Tribe are consulting with the USFWS to limit impacts to the Desert Tortoise
- Desert Tortoise on-site will be relocated to a suitable area within the Reservation to prevent impacts; approximately 6,000 acres have been set aside by the Tribe for this purpose.

Project Location

Site Rendering

Cultural Historical Resources: *No impacts will occur to Cultural or Historical Resources*

On-site Vegetation: The site contains eight cactus and one yucca species

Impacts to vegetation will be minimized as much as practical and minimized through implementation of a Restoration Plan.

- *Cylindropuntia bigelovii - teddy bear cholla*
- *Cylindropuntia ramosissima - pencil cactus*
- *Cylindropuntia echinocarpa - silver cholla*
- *Echinocactus polycephalus - cottontop cactus*
- *Echinocereus engelmannii - hedgehog cactus*
- *Ferocactus cylindraceus - barrel cactus*
- *Mammillaria tetrancistra - fishhook cactus*
- *Opuntia basilaris - beavertail cactus*
- *Yucca schidigera - Mojave yucca*

Other Short-term Impacts:

- Air Quality will have short term impacts during construction via equipment and vehicle emissions and fugitive; however, will have beneficial long term impacts as the Projects acts to reduce use of fossil fuels for future energy production.
- Surface Water Quality: impacts to downstream water quality and sedimentation issues will be minimized via use of erosion control devices and implementation of a Construction Stormwater Pollution Prevention Plan
- Groundwater use will not exceed allocated limits to the Tribe set by the State Engineer.

Comment Card

Bureau of Indian Affairs Public Meeting for the Draft EIS on the proposed KRoad Moapa Solar Generation Facility, Clark County, NV

Name: _____ County: _____

Address: _____ City: _____ State: _____ Zip Code: _____

You may not comment anonymously. However, we will withhold your name if you check this box ☐

Comment (s): _____

Mail to: United States Department of the Interior -BUREAU OF INDIAN AFFAIRS
SOUTHERN PAIUTE AGENCY P.O. Box 720 St. George, Utah 84771

Thank You for your participation

Comment Card

Bureau of Indian Affairs Public Meeting for the Draft EIS on the proposed KRoad Moapa Solar Generation Facility, Clark County, NV

Name: _____ County: _____

Address: _____ City: _____ State: _____ Zip Code: _____

You may not comment anonymously. However, we will withhold your name if you check this box ☐

Comment (s): _____

Mail to: United States Department of the Interior -BUREAU OF INDIAN AFFAIRS
SOUTHERN PAIUTE AGENCY P.O. Box 720 St. George, Utah 84771

Thank You for your participation

This page intended to be blank.

APPENDIX C:

COMMENT SUMMARY TABLE AND

FORMAL COMMENT LETTERS

This page intended to be blank.

Table C-1. Draft EIS Comments Summary Table

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
T	1	1	HAZ	Has K Road thought to erect a transfer station pre & post construction to handle trash (recycle materials: plastic, aluminum cans, construction materials). Transfer station a fenced compound with recyclable bins with lids to keep crows and vector controls in check.	IA
T	1	2	AQ	Possible pave or Type 2 gravel on access road to facility to minimize dust abatement. Also, with paved or Type 2 material on access road tortoises become more visible.	IA
T	1	3	WLD	Look at seasonal speed limit signs for tortoise activity.	IA
G	2	1	MS	The U. S. Geological Survey has reviewed the Draft EIS for the Proposed K Road Moapa Solar Generation Facility, Clark County, Nevada. In this regard, we have no comments at this time.	OOS
G	3	1	MS	The National Park Service, National Trails Intermountain Region (NTIR) office has reviewed the Draft Environmental Impact Statement (DEIS) for this undertaking. We co-administer the Old Spanish National Historic Trail (NHT) with the Bureau of Land Management. We have found some inaccurate statements about the nature of the Old Spanish NHT and its administration that should be corrected before the Final Environmental Impact Statement is published. We also have some concerns about the visual effects of the project on the Old Spanish National Historic Trail. We find it interesting and somewhat baffling that you did not contact the National Park Service NTIR office for comments on this project. A Google search for the terms "Old Spanish National Historic Trail" lists our office's website first, and our trail map second.	OOS
G	3	2	MS	Our office has a congressional mandate to administer the Old Spanish National Historic Trail, in partnership with the BLM. We do not delegate our administrative responsibilities to BLM or any other entity. We do not designate any agency, group, or individual to speak for us regarding issues of trail administration. We could have provided you with clarification regarding the legal and administrative status of the trail and the nature of its resources. We believe that you should refer to the National Trail System Act, and describe agency roles in the administration of National Historic Trails	OOS

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
				in your legal mandate descriptions in the appendices. The legal reference is 16 USC 1251.	
G	3	3	ALT	We strongly prefer the western optional location eliminated from detailed analysis shown on Figure 2-3 because it would have little to no visual effect to the Old Spanish NHT viewshed. We wonder why this optional location was not analyzed as an action alternative instead of being arbitrarily eliminated.	ALT
G	3	4	PN	On page 3-52 and 4-59, you combine the Mormon Road and the Old Spanish Trail together as the "Old Spanish Trail/Mormon Road National Historic Trail." This is not accurate. The term "National Historic Trail" is a specific legal designation. In this area the only National Historic Trail is the Old Spanish National Historic Trail. Congress designated the route of the Old Spanish National Historic Trail, not the National Park Service, and not the Bureau of Land Management, nor is either agency empowered to arbitrarily change the designated route shown on the maps that were part of the Act passed by Congress, add or remove segments, or change its name. The period of significance for the Old Spanish National Historic Trail is 1829-1848. What was later termed the Mormon Road is later and is not associated with the events that made the Old Spanish Trail nationally significant. We would suggest the wording "Old Spanish National Historic Trail/Mormon Road" if you wish to combine the two, or just leave out the words "National Historic Trail" if you wish to refer to the generic version of the trail, as in the McBride and Rolf 2001 National Register nomination.	PN
G	3	5	MS	You state on page 3-52 that you asked the Old Spanish Trail Association about the trail, and published the letter you sent them, to which they apparently did not respond, since no response is published. If they did not respond, you should probably state that, rather than stating, "Inquiries to the National and local chapters of the Old Spanish Trail Association regarding the Old Spanish Trail corridors in the Proposed Project area resulted in no concerns." No response is not quite the same thing as no concerns. If the Association did respond, please publish their communication.	OOS
G	3	6	CUM	On page 3-53, you state that "No segments contributing to the eligibility or significance of either of these properties have been	IA

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
				identified in the study area." This statement is not accurate. In fact, there is a high-potential route segment of the Old Spanish NHT identified in our draft Comprehensive Management Plan for the trail that lies immediately south and adjacent to the project area called the California Crossing High Potential Route Segment. A high-potential route segment is defined in the National Trail System Act as a segment of a trail which would afford high quality recreation experience in a portion of the route having greater than average scenic values or affording an opportunity to vicariously share the experience of the original users of a historic route. A high potential route segment does contribute to the significance of the trail. It is the opinion of NTIR that this undertaking, particularly the transmission line and facilities, may have adverse visual effects on this high potential route segment. The transmission towers are up to 150 feet high and would be visible for many miles. None of your visual effects key observation points were taken along this high potential route segment, which lies between your KOP 1 and KOP 3. We request that additional visual effects analysis be conducted for the effects of the transmission lines and the solar plant on the viewshed of the California Crossing high potential route segment.	
G	3	7	MS	On page 4-60, you state, "A segment of the original Old Spanish Trail route has been located south of the Proposed Project area along the California Wash by the BLM, but not formally documented, that is more accurate than the current National Park Service route." This subjective and unattributed statement is incorrect on several counts. • First, since it is not formally documented, there is no particular reason to think that the indicated segment is associated with the Old Spanish National Historic Trail at all, or that is accurately mapped in any way. No evidence is presented as to its date, no documentary evidence is presented as to its association with the events that make the Old Spanish Trail significant, and no historic maps or other evidence are presented showing the location of this alleged segment at any particular period in	OOS

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
				time. In the absence of any real evidence, this is just another old trail segment that could be anything, and should not be considered part of the Old Spanish National Historic Trail. • Secondly, the National Park Service did not designate the current route, Congress did. Until Congress alters the act that created the Old Spanish National Historic Trail, the route they identified on the maps associated with the law they passed is the official route of the Old Spanish National Historic Trail. Agencies are not empowered to alter the route arbitrarily based on opinion. When additional segments are proposed for addition to a National Historic Trail, they are studied and evaluated, and if legitimate, the results are presented for congressional action to add them to the particular National Historic Trail.	
G	3	8	PN	Your KOP 5 is thus not on the Old Spanish National Historic Trail, so please clarify this.	PN
G	3	9	PV	NTIR realizes that reserved tribal lands are sovereign, and we have no wish to interfere with tribal activities. We support the concept of alternative energy generation. Photovoltaic facilities of the type proposed are generally not as high off the ground as some alternative energy generating equipment and would thus be highly preferable to other solar technologies in terms of visual effects. However, we are concerned that the setting of the California Crossing high potential route segment of the Old Spanish National Historic Trail could be adversely affected by visual impacts and contrast from transmission lines running off the site, with poles up to 150 feet tall, substations, maintenance structures, maintenance roads, and associated noise, dust, or light from the proposed site. We request that additional visual effects analysis be conducted for the effects of the transmission lines and the solar plant from the California Crossing high potential route segment.	IA
G	3	10	MS	Additionally, we request that the errors in the administrative and descriptive language described above be corrected for the Final Environmental Impact Statement.	OOS
S	4	1	MS	Overall, the measures to mitigate and manage construction and operation of the facility and	OOS

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
				appurtenances as they relate to biological resources are satisfactory as expected. The Department is supportive of the use of tubular-H design of 345kV and 500kV transmission structures as opposed to lattice-style designs. While time a cost considerations were identified, the Department believes that the tubular-H design would be most effective in discouraging subsidy of perch and nest sites to raptors and ravens mindful of the increased potential for predation on desert tortoises and other small wildlife. The horizontal member of the transmission structure should be fitted with an inverted-Y bar on top that discourages perching. This is in line to considerations by Prather & Messmer (2010). See attached NDOW comment letter for citation.	
S	4	2	HAB	Indirect significant impacts are stated possibly affecting Moapa Dace as a result of groundwater pumping. How will the project proponent avoid and monitor for connectivity and indirect affects to water and wildlife resources of the nearby Warm Springs area and the Muddy River system?	IA
S	4	3	HYD	The document does not fully describe groundwater connectivity between the project site hydrographic basins of Garnett Valley and California Wash to the Muddy River-Warm Springs area. The Warm Springs area harbors breeding populations of the southwestern willow flycatcher and yellow-billed cuckoo as well as the Moapa Dace.	IA
S	4	4	WLD	• In reviewing species descriptions, common and scientific nomenclature used was either misspelled or indicated inaccurate representation of wildlife for the project area and vicinity. Reviewing the botanical descriptions showed similar problems. Attention to this would strengthen the scientific credibility of the document. • Mindful that context of the wild burro description was to the Muddy HMA, 20 miles distant from the project site, it should be understood that while wild burros are a biological resource, they are not defined as wildlife by either federal or state laws and should be removed from section 3.8.2.1.	IA
S	4	5	WLD	• The only clear distinction between	IA

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
				these two sections (3.8.3 & 3.8.4) is that faunal species are addressed in 3.8.3 and floral species are addressed in 3.8.4. Otherwise the distinction in the use of the term *Special Status Species* is unclear. • Consulting the October 2011 listing of Nevada BLM Sensitive Species would help update considerations for species addressed in these sections as well as section 3.8.2.1.	
S	4	6	WLD	For lands affected by the project not located on tribal lands (i.e. BLM right-of-way), inclusive of considerations relevant to the anticipated *Desert Tortoise Relocation Plan* (Appendix B), a Special Purpose Permit must be obtained if desert tortoises are encountered and need to be moved out of harm's way as per NAC 503.093 and NRS 503.597.	IA
S	4	7	WLD	In addition with measures implemented to avoid conservation conflicts with species similar to the desert tortoise, inclusion of the Department's Gila monster protocol as part of project worker education and biological monitoring is recommended. The Gila monster protocol is accessible online at: http://www.ndow.org/wild/conservation/reptile/07Gila_Protocol.pdf.	IA
O	5	1	MS	• Please accept these jointly prepared comments, submitted on behalf of the Center for Biological Diversity, the natural Resources Defense Council, and the Sierra Club on the Draft EIS for the K Road Moapa Solar Facility prepared on behalf of the Moapa Band of Paiute Indians. • We encourage the development of a solar power project on the Tribal Lands. However, like any project, proposed solar power projects should be thoughtfully planned to minimize impacts to the environment. In particular, renewable energy projects should avoid impacts to sensitive species and habitat. Only by maintaining the highest environmental standards with regard to local impacts, and effects on species and habitat, can renewable energy production be truly sustainable.	OOS
O	5	2	WLD	Additional desert tortoise surveys should be conducted this spring to better determine	IA

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
				tortoise density.	
O	5	3	WLD	The DEIS states that a translocation plan will be developed along with a Biological Opinion required by the ESA. Such plan should heed the above warning (see attached Conservation Group Formal Letter – Scientific Advisory Committee statement, pg. 4), and include the called for specific monitoring and research. We further request that the translocation plan be made available for public review and comment prior to final decision being made on this project.	OOS
O	5	4	WLD	We are further concerned that the proposed 6,000 acre recipient site does not provide adequate quality desert tortoise habitat. The tortoise habitat on the Project site should be analyzed to determine if it is Category I or II habitat for desert tortoise. While we agree that a direct comparison of numbers is clouded by a difference in survey protocols used, we are nonetheless concerned that any translocation site has the quality habitat and the capacity to absorb the number of tortoises envisioned to be in need of translocation.	IA
O	5	5	HAB	Any translocation site must be protected from degradation in perpetuity. Translocation land should be preserved on the Tribal Lands off-site of the Project in a ration of several acres preserved in perpetuity for every acre disturbed by the Project, with the Tribe and the Department of the Interior to commit to taking all legal actions to preserve such land in perpetuity (including, but not limited to the execution and approval of perpetual conservation easements and/or amendments to the Tribal Ordinance). The Tribe indicated that the recipient site would not be fenced, leading to further concerns on what regulatory or other mechanism will ensure the long term protection of the site and the resident tortoises. This issue must be satisfactorily addressed in the final EIS and decision.	OOS
O	5	6	WLD	Another issue related to translocation is that of the disposition of individuals that are serpositive when given an enzyme-linked immunosorbent assay. Hudson and others postulate that in some cases a serpositive indication may merely be an indication of high natural immunity or a survivor of a previous infection rather than an infectious individual. Hudson offers recommendations related to translocation which should be incorporated into the translocation plan and implemented. We also urge that a formal	IA

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
				well-designed study of the long-term survival of translocated tortoises be required as a mitigation measure by the proponent to test whether there are any differences among asymthematic serpositive individuals and asymthematic sernegative individuals.	
O	5	7	WLD	During October 2012 desert tortoise surveys, three burrowing owl burrows were noted, although in cliffs, where solar infrastructure would presumably not be located. Burrowing owls should be passively relocated to the extent their burrows are impacted.	IA
O	5	8	VEG	Plant surveys should be conducted for Beaverdam breadroot, three-corner milkvetch, sticky buckwheat, rosy twotoned penstemon, and white bearpoppy during spring flowering periods and any found plant locations geospatially mapped.	IA
O	5	9	VEG	• Avoidance of sensitive and state-listed plants should be taken into account when developing the Project footprint and layout, and solar infrastructure should be sited and arranged to avoid impacting such plants. • A trained desert botanist should be on-site during construction working with crews to avoid or minimize harm. • Depending on the characteristics of the species and the specific locations, plants should be salvaged or fenced and protected from harm to the maximum extent practical. Cacti, yucca, and appropriate sensitive plants should be salvaged and made available for restoration on-site and elsewhere. • Currently, the Tribal Ordinance does not dictate how state protected species will be applied or dealt with on tribal lands. To the extent it is not possible to avoid or salvage sensitive or state-listed plants, the Proponent should work with a trained desert botanist to identify other portions of the Tribal Lands on which the species occur and arrange with the Tribe and the Department of the Interior to preserve such lands for conservation purposes in perpetuity as compensation for the removal of habitat for such sensitive or state-	IA

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
				listed plant species.	
O	5	10	VEG	The treatment or spreading of noxious or invasive weeds could result in inadvertent mortality or injury of the native plant species. We request the public be afforded the chance to view and comment on the Weed Management Plan, which was not included in the DEIS.	OOS
O	5	11	HAB	The DEIS states that the Proponent will prepare a Site Restoration Plan for decommissioning. We request the public be afforded the chance to view and comment on the Site Restoration Plan, which was not included in the DEIS.	OOS
O	5	12	WLD	The DEIS states that an "Avian and Bat Protection Plan" will be produced to mitigate the take and adverse impacts to species protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, but fails to provide any details as to how the mitigation would be accomplished. We request that the public be afforded the opportunity to review the Avian and Bat Protection Plan prior to a final decision being made on the approval of this project. The proposed mitigations in section 5.1.4 of the DEIS are a good beginning.	OOS
O	5	13	WLD	While the DEIS assures us that the 72 acre-feet of ground water needed for this project will have no independent effects on this endangered species (Moapa Dace), we remain concerned. The White River Carbonate Flow System, of which the California Wash Basin is a part, is under heavy assault from on-going and proposed development. We believe some form of mitigation should be required to help ensure adequate monitoring of the spring flows vital to the dace should be required.	IA
O	5	14	WLD	The Project site is within the range of the Gila monster. The Proponent should develop a plan for translocation Gila monsters if encountered during construction activities.	IA
O	5	15	CUM	The DEIS limits the geographic scope of biological impacts to within the Tribal Lands. Although the DEIS also states that projects were included in cumulative analysis if information on them was available in the BLM's GeoCommunicator mapping system, the DEIS does not include a discussion of the cumulative impacts caused by numerous proposed solar energy developments on BLM lands in Clark County. We believe the geographic scope of biological impacts should	PN

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
				be expanded to an area greater than the Tribal Lands to address ecosystem-level impacts, and should, at a minimum, address the cumulative impacts of multiple proposed large solar energy developments on adjacent or nearby BLM lands.	
O	6	1	HYD	We are concerned that the discussion of the hydrology of the area and the plans for dealing with run-off waters from the project are inadequate. Some of the soils on the site are easily eroded by flowing water. The amount of run-off from the approximately 1400 acres of solar panels at full build-out will be quite significant. It is not unknown to have summer thunderstorm events that can dump up to two inches of rain in a 30 minute period in an area of a few thousand acres. When that happens at the site of this project the short term run-off will amount to more than 200 acre-feet of water, which will flow down California Wash into the Moapa Valley. Historically, there have been severe floods in the Moapa Valley due to flood waters coming from the California Wash. It appears this project will exacerbate flood flows in the California Wash due to the large area of absolutely impermeable surface of the solar panels. A statement that flood flows from this project will not exceed pre-project flows needs some clear and convincing documentation.	IA
O	6	2	HYD	The DEIS talks about using gabions and detention basins for trapping sediment but doesn't discuss actual acreage of detention basins, volumes of water to be detained or release rates or how sediment accumulation in detention basins would be dealt with in order to preserve the functionality of the basins. Also, there is no mention of how the detention basins would be handled so as to prevent growth of tamarisk, a noxious weed in this area. These are items that need to be spelled out in detail in the DEIS.	IA
O	6	3	VEG	In terms of sensitive plants there is a list of cacti and some shrubs but no annual plants are mentioned. This is probably due to the fact that the tortoise surveys were done in the Fall when annuals are not normally present. The result is that species like the Beaverdam breadroot (*Pediomelum castoreum*) and three-corner milkvetch (*Astragalus geyeri* var. *triquetrus*) are only mentioned as part of a literature survey. There is a significant population of Beaverdam breadroot a relatively short distance to the west of the	IA

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
				project site on the southwest corner of the Moapa Paiute Reservation and threecorner milkvetch occurs in areas of eolian sand along and south of the powerline corridor in Dry Lake Valley not far west of the Crystal substation. The list of species considered in the biological assessment includes the Mt. Charleston Blue Butterfly that does not occur on the site or on impacted habitat but yet ignores important plant species which are found on or near the site. It is not logical to plan a pre-construction survey to assess the status of annual and perennial vegetation on the site just before the entire site is graded. The purpose of a NEPA analysis is to provide all pertinent information prior to project approval so that problems can be identified before irreversible decisions are made and actions taken.	
O	6	4	WLD	No mention is made of the Gila Monsters although they definitely occur in Dry Lake Valley and the lower reaches of the Arrow Canyon range only a short distance from the project site.	IA
O	6	5	WLD	The project proponents are planning to relocate desert tortoises collected from the site to another area on the Reservation but no specific plan for how this would be done or exactly where the relocation area would be is included. To just state that details will be worked out later is insufficient. Given the poor track record in relocating tortoises in the Mojave Desert the translocation plan, with details about preventing excessive predation, needs to be spelled out in this DEIS. The precarious state of tortoise populations in the Mojave Desert, and particularly the distinct population segment in the Northeast Mojave, mandates that the very best techniques for finding and relocating tortoises be employed. It appears that even under the best scenario all the hatchlings and most of the juveniles on the site will be lost with the construction of this project, so it is imperative that the adults that are captured continue to be part of a successful breeding population.	IA
O	6	6	PV	In the area of visual resources the pole structure towers proposed will be much more noticeable than the lattice style towers used in the existing power line corridor to the north of the site. Since lattice style towers have been in common use for many years for high voltage transmission lines the statement that there is insufficient time for testing and	PN

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
				evaluating the lattice design doesn't make sense. Lattice style towers would be much less visually intrusive than the steel pole towers being proposed.	
G	7	1	MS	The EPA has rated the DEIS as Environmental Concerns – Insufficient Information (EC-2). See EPA formal comment letter for rating definitions.	OOS
G	7	2	HYD	Comments are in regards to pages 4-18 and 4-19. The detailed drainage study should occur prior to project implementation, so that the additional information it would yield can inform any needed adjustments in the project design. Such adjustments to project design could include increased buffers around the drainages and the inclusion of small detention basins. We recommend including the detailed drainage study in the Final EIS. The adaptive management approach for managing erosion should be documented in the mitigation measures listed in Chapter 5. We recommend that a framework for an adaptive management plan be included in the Final EIS, including a discussion of the criteria that will be used to evaluate effectiveness of the erosion and sedimentation control measures and what modifications are available to address typical problems, to serve as a troubleshooting guide. For example, the framework should describe actions that could be taken if excessive erosion or sedimentation is observed. Based on the information presented in the DEIS, we recommend that (1) the six large drainages be given wide buffers so the channels may adjust to the new hydraulic conditions without the need for major human-made structures (2) permanent sediment and channel elevation monitoring stations be established to assist in the adaptive management of erosion and sedimentation (3) low-impact development techniques, such as bioretention, be explored as potential mitigation for changes in the drainage pattern.	IA
G	7	3	AQ	This comment is in regards to Construction Vehicle Emissions. The mitigation measures that EPA previously recommended are reasonable, and we continue to recommend that they be incorporated into the project. Any approvals made by the BIA for the project should include a condition that the lessee incorporate the following measures into	IA

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
				construction contracts. For more information on nonroad mobile sources and mitigation, see at http://www.epa.goc/nonroad. (1) Maintain and tune engines per manufacturer's specifications to perform EPA certification levels, where applicable, and to perform at verified standards applicable to retrofit technologies. (2) Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained. (3) Prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations. (4) If practicable, lease new, clean (diesel or retrofitted diesel) equipment. In general, commit to the best available emissions control technology. Tier 4 engines should be used for project construction equipment to the maximum extent feasible. (5) Utilize EPA-registered particulate traps and other appropriate controls where suitable to reduce emissions of diesel particulate matter and other pollutants at the construction site. (6) Develop construction traffic and parking management plan that minimizes traffic interference and maintains traffic flow.	
G	7	4	CUM	This comment is in regards to fully representing cumulative impacts on the desert tortoise. EPA recommends that the spatial scope of the cumulative impact assessment for the Mojave desert tortoise be expanded, consistent with the Council on Environmental Quality (CEQ) guidance. We recommend consulting with USFWS on an appropriate boundary for this analysis. We understand that the USFWS will consider impacts across the range of the species for the Biological Opinion that will be issued under Section 7 of the Endangered Species Act. BIA may wish to incorporate information from the BO into the Final EIS to improve this analysis. However, we note that the application and interpretation of the definition of cumulative impacts under NEPA and ESA differ, and BIA should ensure the analysis in the FEIS is consistent with CEQ guidance.	IA
G	7	5	HYD	The DEIS contains contradictory information	IA

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
				regarding the capacity of the water wells. Page 2-33 states that the secondary water source test wells are estimated to have the ability to deliver water at 1,000 to 1,500gpm, a capacity greater than the existing proposed use well, however Page 4-14 states that the existing proposed use well is capable of providing more than 1,700 gpm of water, which is obviously not less than the amount cited for the secondary water test wells on p. 2-33. The FEIS should clarify this. It should also provide additional information regarding the likelihood/frequency that the unimproved road to the secondary wells would be utilized, and ensure that mitigation measures are included to ensure desert tortoise do not get crushed on this road.	
G	7	6	PN	The induced growth (indirect effects) associated with the additions to the Travel Plaza that electrification would support (p. 2-19) should be disclosed.	PN
G	7	7	PN	In several places in the DEIS, there is reference to compliance with applicable federal, state and local laws and regulations, or with Laws, Ordinances, Regulations and Standards (LORS). Because the project is on tribal land, it is important to identify which laws are applicable, and if laws are not applicable, to identify the specific regulation or standard that is being specifically adopted for the project.	PN
G	7	8	PN	In many places throughout the DEIS, there is reference to using the "respective methodology prescribed by NEPA." NEPA does not prescribe methodologies, so this wording should be amended.	PRO
G	7	9	HYD	The DEIS also notes that the drainages onsite flow into the California Wash and then into the Muddy River (p. 4-17). The DEIS also states that "The Proposed Project does not contain, nor is tributary to, any waterbodies that are on Nevada's 303(d) list for exceeding state water quality standards (Nevada Division of Environmental Protection 2009)", but notes that the Muddy River is considered impaired and is on the 303(d) list (p. 3-16). This inconsistency should be corrected in the FEIS.	IA
G	7	10	MS	EPA previously recommended that water conservation features be included in the office and maintenance building's bathrooms and that, if landscaping will occur around the office, xeric or drought-tolerant native landscaping be used. We continue to recommend that low-flow toilets and faucets	IA

Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition
				be installed in the offices and maintenance buildings, and that any landscaping minimize the use of irrigation water.	
G	7	11	MS	EPA previously commented against the use of single-sided printing for the Administrative DEIS, and we noted that the DEIS also uses single-sided printing. The BIA, as a federal agency, is subject to Executive Order 13514 – Federal Leadership in Environmental, Energy, and Economic Performance (October 5, 2009) which specifies that it is the policy of the United States that "Federal agencies shall…eliminate waste…". Additionally, the Federal Acquisition Regulation (48 CFR 23.703) states that agencies must "Promote cost-effective waste reduction…". We recommend that the FEIS be printed double-sided.	OOS

Table C-2. Contact Information for Respondents

Letter Number	Respondent Type	Last Name	First Name	Organization	Address	Date Received
1	Tribe	Daboda	Darren	MBOP-Env. Coordinator	PO Box 340, Moapa, Nevada 89025	December 14, 2011
2	Government	Johnson	Brenda	U.S. Geological Survey	USGS Mail Stop 423, Room 5A326, 12201 Sunrise Valley Dr., Reston, VA 20192	January 4, 2011
3	Government	Elliott	Mike	National Park Service, National Trails Intermountain Region	PO Box 728, Santa Fe, NM 87504	January 6, 2012
4	State	Hardenbrook	D. Bradford	Nevada Department of Wildlife	4747 Vegas Drive, Las Vegas, Nevada 89108	January 9, 2012
5	Non-governmental Organization	Mrowka	Rob	Center of Biological Diversity	4261 Lily Glen Ct, North Las Vegas, Nevada 89032	January 9, 2012
5	Non-governmental Organization	Friedman	Sarah	Sierra Club	3435 Wilshire Boulevard, Suite 660, Los Angeles, CA 90010	January 9, 2012
5	Non-governmental Organization	Wald	Johanna	Natural Resources Defense Council	111 Sutter Street, 20th Floor, San Francisco, California 94104	January 9, 2012
6	Non-	Hiatt	John	Red Rock	8180 Placid Street,	January 9,

Letter Number	Respondent Type	Last Name	First Name	Organization	Address	Date Received
	governmental Organization			Audubon Society	Las Vegas, Nevada 89123	2012
7	Government Agency	Manzanilla	Enrique	U.S. Environmental Protection Agency, Region IX	75 Hawthorne Street, San Francisco, California 94105	January 13, 2012

STATE OF NEVADA

DEPARTMENT OF WILDLIFE

1100 Valley Road
Reno, Nevada 89512
(775) 688-1500 • Fax (775) 688-1595

BRIAN SANDOVAL
Governor

KENNETH E. MAYER
Director

RICHARD L. HASKINS, II
Deputy Director

PATRICK O. CATES
Deputy Director

SOUTHERN REGION OFFICE
4747 Vegas Drive
Las Vegas, Nevada 89108
(702) 486-5127 · Fax (702) 486-5133

January 9, 2012

NDOW-SR #: 12-090

Ms. Amy Heuslein
Regional Environmental Protection Officer
BIA Western Regional Office, Branch of Environmental Quality Services
2600 North Central Avenue, 4th Floor Mail Room
Phoenix, Arizona 85004-3008

Re: Draft Environmental Impact Statement for the Proposed K Road Moapa Solar Generation Facility

Dear Ms. Heuslein:

The Nevada Department of Wildlife (Department) appreciates this opportunity for reviewing the Draft Environmental Impact Statement for the proposed K Road Moapa Solar Generation Facility (DEIS). The Department recognizes the importance of solar energy generation for developing renewable energy resources and the promotion of localized economic opportunities and willingness of the Moapa Band of Paiutes (Tribe) in supporting reduction of America's dependence on foreign and fossil-based energy resources.

Overall the measures to mitigate and manage construction and operation of the facility and appurtenances as they relate to biological resources are satisfactory as expected. The Department is supportive of the use of tubular-H design for 345kV and 500kV transmission structures as opposed to lattice-style designs. While time a cost considerations were identified, the Department believes that the tubular-H design would be most effective in discouraging subsidy of perch and nest sites to raptors and ravens mindful of the increased potential for predation on desert tortoise and other small wildlife. The horizontal member of the transmission structure should be fitted with an inverted-Y bar on top that discourages perching. This is in line to considerations by Prather & Messmer (2010).

Mindful that the majority of the proposed project is on tribal land, the following observations and recommendations address aspects of the DEIS concerning groundwater relationships the transmission tie-in with the Crystal substation located on public lands.

Page ES-7, Table ES-2:
As described in Table ES-2 (Water Resources and Special Status Species) indirect significant impacts are stated possible affecting Moapa dace as a result of groundwater pumping. How will the project proponent avoid and monitor for connectivity and indirect affects to water and wildlife resources of the nearby Warm Springs area and the Muddy River system?

Page 3-17, Section 3.5.3 Ground Water:
The document does not fully describe groundwater connectivity between the project site hydrographic basins of Garnett Valley and Califorina Wash to the Muddy River - Warm Springs area. The Warm Springs area harbors breeding populations of the southwestern willow flycatcher and yellow-billed cuckoo as well as the Moapa Dace.

Pages 3-35 to 3-51, Chapter Section 3.8 Biological Resources

- Pages 3-40& 3-41, Section 3.8.2.1, Terrestrial Wildlife:
  - In reviewing species descriptions, common and scientific nomenclature used was either misspelled or indicated inaccurate representation of wildlife for the project area and vicinity. Reviewing the botanical descriptions showed similar problems. Attention to this would strengthen the scientific credibility of the document.
  - Mindful that context of the wild burro description was to the Muddy HMA, 20 miles distant form the project site, it should be understood that while wild burros are a biological resource, they are not defined as wildlife by either federal or state laws and should be removed from section 3.8.2.1.
- Pages 3-41 to 3-51, Sections 3.8.3 and 3.8.4:
  - The only clear distinction between the two sections are that faunal species are addressed in 3.8.3 and floral species are addressed in 3.8.4. Otherwise the distinction in the use of the term *Special Status Species* is unclear.
  - Consulting the October 2011 listing of Nevada BLM Sensitive Species would help update considerations for species addressed in these sections as well as section 3.8.2.1.

For lands affected by the project not located on tribal lands (i.e. BLM right-of-way), inclusive of considerations relevant to the anticipated *Desert Tortoise Relocation Plan* (Appendix B), a Special Purpose Permit must be obtained if desert tortoises are encountered and need to be moved out of harm's as per NAC 503.093 and NRS 503.597. In addition with measures implemented to avoid conservation conflicts with species similar to the desert tortoise, inclusion of the Department's Gila monster protocol as part of project worker education and biological monitoring is recommended. The Gila monster protocol is accessible online at: http://www.ndow.org/wild/conservation/reptile/07Gila_Protocol.pdf

Thank you again for this review opportunity. The Department looks to the success of the proposed project inclusive of implementing appropriate and reasonable considerations for wildlife and wildlife-related activities. For additional assistance, please do not hesitate to contact me.

Sincerely,

D. Bradford Hardenbrook
Supervisory Habitat Biologist
Southern Region- Nevada Department of Wildlife
4747 Vegas Drive
Las Vegas, Nevada 89108
702.486.5127 x3600; 702.486.5133 FAX
bhrdnbrk@ndow.org

AJM/DBH

cc: NDOW, Files

Reference

Prather, P.R. and T.A. Messmer. 2010. Raptor and corvid responses to power distribution line perch deterrents in Utah. J. Wildlife Mgt. 74(4): 796-800.

BIA Western Regional Office
Branch of Environmental Quality Services
Attn: Ms. Amy Heuslein
2600 North Center Ave, 4th Floor Mail Room
Phoenix, AZ 85004-3008

January 9, 2012

Via E-mail: amy.heuslein@bia.gov
paul.schlafly@bia.gov

Subject: Comments on K Road Moapa Solar Project Draft EIS

Dear Ms. Heuslein:

Please accept these jointly prepared comments, submitted on behalf of the Center for Biological Diversity (the "Center"), the Natural Resources Defense Council ("NRDC") and the Sierra Club (the "Conservation Groups") on the Draft Environmental Impact Statement ("DEIS") for the K Road Moapa Solar Facility (the "Project") prepared on behalf of the Moapa Band of Paiute Indians (the "Tribe").

The Center for Biological Diversity is a non-profit, public interest environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 340,000 members and on-line activists throughout Nevada and the United States. The Center has previously submitted scoping comments for this project.

NRDC uses law, science and the support of its members and activists to protect the planet's wildlife and wild places and to ensure a safe and healthy environment for all living things. NRDC has worked to protect wildlands and natural values on public lands and to promote pursuit of all cost effective energy efficiency measures and sustainable energy development for many years. NRDC has over 1.2 million members and online activists nationwide.

The Sierra Club is a national nonprofit organization of approximately 1.3 million members and supporters dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. The Sierra Club's concerns encompass protecting our public lands, wildlife, air and water while at the same time rapidly increasing our use of renewable energy to reduce global warming.

We submit these comments on behalf of our members, activists, staff, and members of the general public who are interested in protecting native species and their habitats as well as supporting the development of clean, renewable sources of electrical energy.

The development of renewable energy is a critical component of efforts to reduce carbon pollution and climate-warming gases, avoid the worst consequences of global warming, and to assist in meeting needed emission reductions. We strongly support the development of renewable energy production, and the generation of electricity from solar power, in particular.

The Tribe and the Southern Nevada Group of the Sierra Club have worked together for years to retire the Reid Gardner coal-fired power plant ("Reid Gardner"), which emits more than 4,000 tons of nitrogen oxides, more than 1,200 tons of sulfur dioxide, and more than five million tons of carbon pollution each year.[1] Reid Gardner is located just a few hundred yards from the Moapa River Indian Reservation (the "Tribal Lands") and is a major source of air pollutants and particulate matter--causing well- documented serious respiratory and other health problems amongst those living on Tribal Lands. The Tribal Lands are located within airshed region H-218 (California Wash) which is a non-attainment area for ozone emissions. [2] Electricity production from the Project will not cause emissions, and the Project is anticipated to have a positive effect on climate change.[3] By providing power to the Moapa Travel Plaza, the Tribe's primary business enterprise, the Project will further reduce greenhouse gas emissions by allowing the Tribe to replace diesel generators. We see the Project as a means to illustrate that it is possible to develop clean, renewable and cost-effective sources of electrical energy in Nevada.

We commend the commitment of K Road Power (the "Proponent") to training and working with Tribal members. The Project will provide needed employment in the area, as well as revenue to

[1] http://nevada.sierraclub.org/sngroup/text/Reid%20Gardner%20Costly%20Contamination.pdf

[2] DEIS, page 3-23.

[3] DEIS, page 4-26.

the Tribe, while supporting the creation of a diverse, well-trained workforce whose skills can be transferred to meeting state and national renewable energy goals.

For the above reasons, we encourage the development of a solar power project on the Tribal Lands. However, like any project, proposed solar power projects should be thoughtfully planned to minimize impacts to the environment. In particular, renewable energy projects should avoid impacts to sensitive species and habitat. Only by maintaining the highest environmental standards with regard to local impacts, and effects on species and habitat, can renewable energy production be truly sustainable.

Based on our review of the DEIS, attendance at the public informational meetings and meeting with the proponent, we offer the following comments for your consideration.

Desert Tortoise Issues

The desert tortoise Mojave Desert population has been provided protection under the Endangered Species Act ("ESA") as a threatened species since 1990.[4] A plan to recover and conserve the species was formalized in 1994, and in May of 2011 was revised to incorporate new information and science.[5] Habitat modeling in the revised recovery plan indicated that the site of the project, in general, has high potential for tortoise habitat and that the project is within the revised Northeastern Recovery Unit.[6] As correctly noted in the DEIS, there is a formal critical habitat unit (Mormon Mesa) to the north, west and east of the project.[7]

Field surveys for desert tortoise were conducted in October 2010.[8] The annual spring cycle of the Mojave population of desert tortoise begins in February or March when they emerge from burrows, and the fall cycle begins in Sept-Oct.[9] Additional desert tortoise surveys should be conducted this spring to better determine tortoise density.

The project would result in the loss of approximately 2224 acres of potential habitat for desert tortoise, and give rise to the potential for both direct and indirect take of tortoises.[10] The

[4] U.S. Fish and Wildlife Service. 2011. Revised recovery plan for the Mojave population of the desert tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. Page 1.
[5] Note: The DEIS cites to a 2008 draft of the 2011 Revised Recovery Plan.
[6] U.S. Fish and Wildlife Service. 2011. Page 46.
[7] Ibid.
[8] DEIS, page 3-35.
[9] DEIS, page 3-42.
[10] DEIS, Appendix J, page 6-1.

proponent has prepared a biological assessment under Section 7 consultation of the ESA and proposes various avoidance, minimization, mitigation and monitoring measures such as education of on-site workers, full-time on-site tortoise biologists, clearance surveys, exclusionary fencing and other best management practices that have been developed for similar projects in desert tortoise habitat.[11]

The project also proposes to move or translocate desert tortoises from within the solar field fenced area to one or more receiving sites on Tribal Lands. Based on field surveys and established population estimation tools, between 25-103 tortoises would be moved.[12] We believe the biological assessment understates the risks associated with translocation and exaggerates the success.[13] Translocating tortoises involves capturing, handling and transporting them, all of which can induce elevated stress which in turn can directly or indirectly lead to a decline of tortoise health and vigor.[14] This is particularly true if relocation/translocation methods are performed improperly, such as during extreme temperatures, or in years with poor moisture and available forage, as was experienced with translocation at Fort Irwin, California in 2008 when large die-offs and losses to predation were experienced.

The Scientific Advisory Committee (SAC) of the U.S. Fish and Wildlife Service's Desert Tortoise Recovery Office has recently concluded that:

> "translocation is fraught with long-term uncertainties, notwithstanding recent research showing short-term successes, and should not be considered lightly as a management option. When considered, translocation should be part of a strategic population augmentation program, targeted toward depleted populations in areas containing 'good' habitat. The SAC recognizes that quantitative measures of habitat quality relative to desert tortoise demographics or population status currently do not exist, and a specific measure of "depleted" (e.g., ratio of dead to live tortoises in surveys of the potential translocation area) was not identified. Augmentations may also be useful to increase less depleted populations if the goal is to obtain a better demographic structure for long-term population persistence. Therefore, any translocations must be accompanied by specific

[11] DEIS, page 5-3 and Appendix J, pages 2-9 – 2-12.
[12] Ibid, page 4-13.
[13] Ibid, page 4-11.
[14] Dickens, Molly J., David J. Delehanty, and L. Michael Romero. 2010. Stress: An inevitable component of animal translocation. Biol. Conserv. 2010.02.032.

monitoring or research to study the effectiveness or success of the translocation relative to changes in land use, management, or environmental condition."[15]

The DEIS states that a translocation plan will be developed along with a Biological Opinion required by the ESA. Such plan should heed the above warning, and include the called for specific monitoring and research. We further request that the translocation plan be made available for public review and comment prior to final decision being made on this project.

We are further concerned that the proposed 6,000 acre recipient site does not provide adequate quality desert tortoise habitat. The tortoise habitat on the Project site should be analyzed to determine if it is Category I or II habitat for desert tortoise. The Tribe and proponent both revealed during discussions we had with them that significant areas were largely rocky and devoid of vegetation and that surveys of the recipient site had found tortoises at a far lesser density than at the solar site. While we agree that a direct comparison of numbers is clouded by a difference in survey protocols used, we are nonetheless concerned that any translocation site have the quality habitat and the capacity to absorb the number of tortoises envisioned to be in need of translocation.

Further, any translocation site must be protected from degradation in perpetuity. Translocation land should be preserved on the Tribal Lands off-site of the Project in a ratio of several acres preserved in perpetuity for every acre disturbed by the Project, with the Tribe and the Department of the Interior to commit to taking all legal actions to preserve such land in perpetuity (including, but not limited to the execution and approval of perpetual conservation easements and/or amendments to the Tribal Ordinance). The Tribe indicated that the recipient site would not be fenced, leading to further concerns on what regulatory or other mechanism will ensure the long term protection of the site and the resident tortoises. This issue must be satisfactorily addressed in the final EIS and decision.

Another issue related to translocation is that of the disposition of individuals that are serpositive when given an enzyme-linked immunosorbent assay. Hudson and others postulate that in some cases a serpositive indication may merely be an indication of high natural immunity or a survivor of a previous infection rather than an infectious individual.[16] Hudson offers recommendations related to translocation which should be incorporated into the translocation plan and implemented.[17] We also urge that a formal well-designed study of the long-term survival of translocated tortoises be required as a mitigation measure by the proponent to test whether there

---

[15] U.S. Fish & Wildlife Service. 2009. Scientific Advisory Committee, Desert Tortoise Recovery Office. Meeting Summary, March 13, 2009, San Diego Wild Animal Park, Escondido, CA. pgs 4. Available at: http://www.fws.gov/Nevada/desert_tortoise/documents/sac/20090313_SAC_meeting_summary.pdf .

[16] Hudson, P., K. Berry, C.R. Tracy, E. McCoy, K. Ralls, J.M. Reed, and R. Steidl (Desert Tortoise Science Advisory Committee). 2009. Understanding disease in desert tortoise populations: a brief summary of knowledge and recommendations pertinent to conservation. A white paper presented to the U.S. Fish and Wildlife Service.

[17] NOTE: The cites in the DEIS to Jacobson's 1992 report are outdated and do not reflect the current best available science.

are any differences among asymthematic serpositive individuals and asymthematic sernegative individuals.

Burrowing Owl Issues

During October 2010 desert tortoise surveys, three burrowing owl burrows were noted, although in cliffs, where solar infrastructure would presumably not be located.[18] Burrowing owls should be passively relocated to the extent their burrows are impacted.

Rare Plant Issues

While on-site surveys were conducted to verify the presence or absence of the Las Vegas buckwheat and various state-protected cacti and yuccas, either no such surveys were conducted to search for other BLM sensitive and state-listed species or such surveys were not made available. The proposed "pre-construction surveys" alone are not sufficient. Plant surveys should be conducted for Beaverdam breadroot, three-corner milkvetch, sticky buckwheat, rosy twotoned penstemon and white bearpoppy during spring flowering periods and any found plant locations geospatially mapped.

Avoidance of sensitive and state-listed plants should be taken into account when developing the Project footprint and layout, and solar infrastructure should be sited and arranged to avoid impacting such plants. A trained desert botanist should be on-site during construction working with crews to avoid or minimize harm. Depending on the characteristics of the species and the specific locations, plants should be salvaged or fenced and protected from harm to the maximum extent practical. (Cacti, yucca and appropriate sensitive plants should be salvaged and made available for restoration on-site and elsewhere. A nursery could be constructed on the Tribal Lands to care for transplants). Currently, the Tribal Ordinance does not dictate how state protected species will be applied or dealt with on tribal lands.[19] To the extent it is not possible to avoid or salvage sensitive or state-listed plants, the Proponent should work with a trained desert botanist to identify other portions of the Tribal Lands on which these species occur (either in the tortoise translocation lands or elsewhere) and arrange with the Tribe and the Department of the Interior to preserve such lands for conservation purposes in perpetuity as compensation for the removal of habitat for such sensitive or state-listed plant species.

The DEIS states the Proponent will incorporate an approved Weed Management Plan to control the growth of weeds and undesired vegetation caused by the clearing and ongoing mowing processes associated with the Project. The treatment or spreading of noxious or invasive weeds

[18] DEIS, page 3-46.

[19] DEIS, page 3-39.

could result in inadvertent mortality or injury of the native plant species.[20] We request the public be afforded the chance to view and comment on the Weed Management Plan, which was not included in the DEIS.

The DEIS states that the Proponent will prepare a Site Restoration Plan for decommissioning. We request the public be afforded the chance to view and comment on the Site Restoration Plan, which was not included in the DEIS.

Avian Species Issues

Golden eagles are likely present on the site on an irregular basis as they utilize the area for foraging as the DEIS recognizes, and there is potential for take from the impacts of transmission infrastructure.[21]

Other species of birds, most if not all protected under the Migratory Bird Treaty Act, are present on the site and would be adversely impacted by the site clearing and construction process.

The DEIS states that an "Avian and Bat Protection Plan" will be produced to mitigate the take and adverse impacts to species protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, but fails to provide any details as to how the mitigation would be accomplished.[22] We request that the public be afforded the opportunity to review the Avian and Bat Protection Plan prior to a final decision being made on the approval of this project. The proposed mitigations in section 5.1.4 of the DEIS are a good beginning.

Moapa Dace Issues

While the DEIS assures us that the 72 acre-feet of ground water needed for this project will have no independent effects on this endangered species, we remain concerned.[23] The White River Carbonate Flow System, of which the California Wash Basin is a part, is under heavy assault from on-going and proposed development. We believe some form of mitigation should be required to help ensure adequate monitoring of the spring flows vital to the dace should be required.

Gila Monster Issues

The Project site is within the range of the Gila monster. The Proponent should develop a plan for translocating Gila monsters if encountered during construction activities.

---

[20] DEIS, page 4-43.

[21] DEIS, page 4-54 – 4-55, 4-58.
[22] DEIS, page 4-54 & 4-55.
[23] DEIS, page 4-55.

Cumulative Impacts Analysis

The DEIS limits the geographic scope of biological impacts to within the Tribal Lands.[24] Although the DEIS also states that projects were included in cumulative analysis if information on them was available in the BLM's GeoCommunicator mapping system,[25] the DEIS does not include a discussion of the cumulative impacts caused by numerous proposed solar energy developments on BLM lands in Clark County. We believe the geographic scope of biological impacts should be expanded to an area greater than the Tribal Lands to address ecosystem-level impacts, and should, at a minimum, address the cumulative impacts of multiple proposed large solar energy developments on adjacent or nearby BLM lands.

We appreciate the opportunity to work with the Tribe and the Proponent on this renewable energy project and look forward to continuing in the successful development of the Project as interested stakeholders.

Sincerely Yours in Conservation,

Rob Mrowka
Ecologist/Conservation Advocate
Center for Biological Diversity
4261 Lily Glen Ct
North Las Vegas, NV 89032

Sarah K. Friedman
Senior Campaign Representative
Beyond Coal Campaign
Sierra Club
3435 Wilshire Boulevard, Suite 660
Los Angeles, CA 90010

Johanna Wald
Director, Western Renewables Project
NRDC
111 Sutter Street, 20th floor
San Francisco, CA 94104

[24] DEIS, page 4-101.

[25] DEIS, page 4-101.

Ms. Amy Heuslein
Regional Environmental Protection Officer
BIA Western Regional Office
2600 North Center Avenue, 4th floor
Phoenix, AZ 85004

amy.heuslein@bia.gov

January 9, 2012

RE: DEIS comments, K Road and Moapa Band of Paiute Indians Solar Facility

Dear Ms. Heuslein,

Thank you for the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the K Road Solar Energy Project on the Moapa Band of Paiute Indians Tribal Lands. While we generally support renewable energy projects we have some concerns about the adequacy of the DEIS for this project.

We are concerned that the discussion of the hydrology of the area and the plans for dealing with run-off waters from the project are inadequate. Some of the soils on the site are easily eroded by flowing water. The amount of run-off from the approximately 1400 acres of solar panels at full build-out will be quite significant. It is not unknown to have summer thunderstorm events that can dump up to two inches of rain in a 30 minute period in an area of a few thousand acres. When that happens at the site of this project the short term run-off will amount to more than 200 acre-feet of water, which will flow down California Wash into the Moapa Valley. Historically, there have been severe floods in the Moapa Valley due to flood waters coming from the California Wash. It appears this project will exacerbate flood flows in the California Wash due to the large area of absolutely impermeable surface of the solar panels. A statement that flood flows from this project will not exceed pre-project flows needs some clear and convincing documentation.

The DEIS talks about using gabions and detention basins for trapping sediment but doesn't discuss actual acreage of detention basins, volumes of water to be detained or release rates or how sediment accumulation in detention basins would be dealt with in order to preserve the functionality of the basins. Also, there is no mention of how the detention basins would be handled so as to prevent growth of tamarisk, a noxious weed in this area. These are items that need to be spelled out in detail in the DEIS.

The biological assessments leave a lot be desired in this DEIS. In terms of sensitive plants there is a list of cacti and some shrubs but no annual plants are mentioned. This is probably due to the fact that the tortoise surveys were done in the Fall when annuals are not normally present. The result is that species like the Beaverdam breadroot (*Pediomelum castoreum*) and three-corner milkvetch (*Astragalus geyeri* var. *triquetrus*) are only mentioned as part of a literature survey. There is a significant population of Beaverdam breadroot a relatively short distance to the west of the project site on the

southwest corner of the Moapa Paiute Reservation and threecorner milkvetch occurs in areas of eolian sand along and south of the powerline corridor in Dry Lake Valley not far west of the Crystal substation. The list of species considered in the biological assessment includes the Mt. Charleston Blue Butterfly that does not occur on the site or on impacted habitat but yet ignores important plant species which are found on or near the site. It is not logical to plan a pre-construction survey to assess the status of annual and perennial vegetation on the site just before the entire site is graded. The purpose of a NEPA analysis is to provide all pertinent information prior to project approval so that problems can be identified before irreversible decisions are made and actions taken. No mention is made of the Gila Monsters although they definitely occur in Dry Lake Valley and the lower reaches of the Arrow Canyon range only a short distance from the project site..

The project proponents are planning to relocate desert tortoises collected from the site to another area on the Reservation but no specific plan for how this would be done or exactly where the relocation area would be is included. To just state that details will be worked out later is insufficient. Given the poor track record in relocating tortoises in the Mojave Desert the translocation plan, with details about preventing excessive predation, needs to be spelled out in this DEIS. The precarious state of tortoise populations in the Mojave Desert, and particularly the distinct population segment in the Northeast Mojave, mandates that the very best techniques for finding and relocating tortoises be employed. It appears that even under the best scenario all the hatchlings and most of the juveniles on the site will be lost with the construction of this project, so it is imperative that the adults that are captured continue to be part of a successful breeding population.

In the area of visual resources the pole structure towers proposed will be much more noticeable than the lattice style towers used in the existing power line corridor to the north of the site. Since lattice style towers have been in common use for many years for high voltage transmission lines the statement that there is insufficient time for testing and evaluating the lattice design doesn't make sense. Lattice style towers would be much less visually intrusive than the steel pole towers being proposed.

Sincerely,

John E. Hiatt

John E. Hiatt
Conservation Chair
Red Rock Audubon Society
8180 Placid Street
Las Vegas, NV 89123
702-461-1171

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

January 13, 2012

Amy Heuslein
Regional Environmental Protection Officer
Bureau of Indian Affairs
Western Regional Office
2600 North Central Avenue, 4th floor
Phoenix, AZ 85004-3008

Subject: EPA comments on the Draft Environmental Impact Statement (DEIS) for the Proposed K Road Moapa Solar Facility, Clark County, Nevada (CEQ # 20110400)

Dear Ms. Heuslein:

The U.S. Environmental Protection Agency (EPA) has reviewed the above-referenced document pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act. Our detailed comments are enclosed.

The proposed project includes construction and operation, in phases, of a 350 megawatt (MW) solar photovoltaic electricity generating facility with associated transmission infrastructure on approximately 2,000 acres of tribal lands on the Moapa River Indian Reservation, 30 miles northeast of Las Vegas, Nevada. EPA supports the increase in renewable energy resource development, as recommended in the National Energy Policy Act of 2005. Using renewable energy resources, such as solar power, can help the nation meet its energy requirements without generating greenhouse gas emissions. We are also very supportive of tribal government interests in renewable energy as a means to help meet tribal economic development goals and help the nation's transition to cleaner energy.

EPA is a cooperating agency for the project and provided comments on the Administrative DEIS to the Bureau of Indian Affairs (BIA) on November 3, 2011. We appreciate the clarifications made to the document in response to our comments. Some comments were not fully addressed and are repeated here. We have recommendations regarding erosion control, air quality impact mitigation, and the assessment of cumulative impacts to the threatened Mojave desert tortoise. We have rated the DEIS as Environmental Concerns – Insufficient Information (EC-2) (see enclosed "Summary of Rating Definitions").

EPA appreciates the opportunity to review this DEIS. When the Final EIS is released for public review, please send one copy to the address above (mail code: CED-2). If you have any questions, please contact Karen Vitulano, the lead reviewer for this project, at 415-947-4178 or vitulano.karen@epa.gov.

Sincerely,

Enrique Manzanilla, Director
Communities and Ecosystems Division

Enclosures: Summary of EPA Rating Definitions
EPA's Detailed Comments

cc: William Anderson, Chairman, Moapa Band of Paiutes
Darren Daboda, Environmental Director, Moapa Band of Paiutes
Michael Burroughs, U.S. Fish and Wildlife Service
Tracey A. LeBeau, Director, U.S. Department of Energy, Office of Indian Energy Policy and Programs
Crystal J. Jackson, Executive Director, Nevada Public Utilities Commission
Steve Black, Counselor to Secretary of the Interior, U.S. Department of the Interior
Janea Scott, Special Assistant to the Counselor, U.S. Department of the Interior

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

Category "1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category "2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category "3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

Water Quality - Erosion and Sedimentation Impacts

The proposed project infrastructure will avoid the six main drainages onsite[1], and we commend the project proponents for this avoidance. However, as the DEIS indicates, there would likely be increased erosion or sedimentation on-site or off-site during both the construction and operational phases of the project that could have long-term adverse effects on surface water quality (p. 4-18). To manage drainage, the project applicant proposes to construct berms to direct the surface flow into the six drainages and off-site. Concrete weirs or rock gabions may also be constructed at key locations within the drainages to minimize velocity, decrease sediment transport and downstream peak flows, and control flash flooding downstream (p. 4-18).

Generally, when levees, berms and weirs are constructed in previously unconfined drainages, there are direct and indirect hydraulic responses to the modifications, including increased bank and channel erosion (scour leading to down cutting and often head cutting of the channel bed), and increases in sediment transport to downstream aquatic environments, especially in poorly consolidated alluvial soils characteristic of desert environments. The DEIS states that the applicant will develop and implement erosion and sediment control measures to minimize impacts for the life of the project (p. 4-19). These will include, at a minimum, soil stabilization measures to offset loss of vegetation, biannual and post-storm monitoring of erosion/sedimentation, and adaptive management if measures are found to be insufficient. The DEIS states that the Tribe will approve the erosion and sediment control measures and the Stormwater Pollution Prevention Plan (SWPPP) prior to construction. We also understand that there are plans for a more detailed engineering study pertaining to drainage/erosion control and that the SWPPP, which is required for the construction phase only, will address impacts that are expected to occur during the operations phase[2].

> *Recommendations*: The detailed drainage study should occur prior to project implementation, so that the additional information it would yield can inform any needed adjustments in the project design. Such adjustments to project design could include increased buffers around the drainages and the inclusion of small detention basins. We recommend including the detailed drainage study in the Final Environmental Impact Statement (FEIS).
>
> The adaptive management approach for managing erosion should be documented in the mitigation measures listed in Chapter 5. We recommend that a framework for an adaptive management plan be included in the FEIS, including a discussion of the criteria that will be used to evaluate effectiveness of the erosion and sedimentation control measures and what modifications are available to address typical problems, to serve as a troubleshooting guide. For example, the framework should describe actions that could be taken if excessive erosion or sedimentation is observed.
>
> Based on the information presented in the DEIS, we recommend that:
>
> - the six large drainages be given wide buffers so the channels may adjust to the new hydraulic conditions without the need for major human-made structures;

[1] determined by the Corps of Engineers to be non-jurisdictional under Clean Water Act Section 404

[2] Personal communication with Amy Heuslein, BIA and Chad Martin, Arcadis Consulting, December 22, 2011

- permanent sediment and channel elevation monitoring stations be established to assist in the adaptive management of erosion and sedimentation;
- low-impact development techniques, such as bioretention, be explored as potential mitigation for changes in the drainage pattern.

Air Quality - Construction Vehicle Emissions

The Las Vegas 8-hour ozone nonattainment area excludes the Moapa River Indian Reservation; however, the reservation is surrounded by this nonattainment area and emissions from the project have the potential to impact it. Therefore, emissions of ozone precursors, (volatile organic carbons (VOCs) and oxides of nitrogen (NOx)) should be minimized through mitigation measures, especially during the construction phase. The DEIS estimates NOx emissions at 94 tons per year (tpy), which approaches the significance threshold of 100 tpy utilized in the DEIS's air impact assessment. The mitigation measures that EPA previously recommended are reasonable, and we continue to recommend that they be incorporated into the project.

Recommendation: Any approvals made by BIA for the project should include a condition that the lessee incorporate the following measures into construction contracts. For more information on nonroad mobile sources and mitigation, see at http://www.epa.gov/nonroad.

- Maintain and tune engines per manufacturer's specifications to perform at EPA certification levels, where applicable, and to perform at verified standards applicable to retrofit technologies.
- Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained.
- Prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations.
- If practicable, lease new, clean (diesel or retrofitted diesel) equipment. In general, commit to the best available emissions control technology. Tier 4 engines should be used for project construction equipment to the maximum extent feasible[3].
- Utilize EPA-registered particulate traps and other appropriate controls where suitable to reduce emissions of diesel particulate matter and other pollutants at the construction site.
- Develop a construction traffic and parking management plan that minimizes traffic interference and maintains traffic flow.

Desert Tortoise - Cumulative Impact Assessment

The geographic boundary utilized for the assessment of cumulative impacts to the threatened Mojave desert tortoise is limited to the reservation boundary (p. 4-101) or to the immediate topographic area (Fig. 4-3). Therefore, the DEIS does not fully present the cumulative impacts that this project, along with other solar projects proposed for the Mohave desert, is expected to have on this resource. As

[3] Diesel engines < 25 hp rated power started phasing in Tier 4 Model Years in 2008. Larger Tier 4 diesel engines will be phased in depending on the rated power (e.g., 25 hp - <75 hp: 2013; 75 hp - < 175 hp: 2012-2013; 175 hp - < 750 hp: 2011 - 2013; and ≥ 750 hp 2011- 2015).

Council on Environmental Quality (CEQ) guidance indicates[4], choosing the appropriate scale to use for cumulative effects analyses is critical (CEQ Guidance, p. 12). CEQ guidance suggests that once the geographic area affected by the project is identified, a list of resources within that zone should be prepared. Then, the geographic areas occupied by those resources outside of the project impact zone should be identified, and in most cases, the largest of these areas will be the appropriate area for the analysis of cumulative impacts (CEQ Guidance, p. 15). CEQ suggests that, for resident wildlife, a species' habitat or ecosystem could be used in a cumulative impact analysis.

Recommendation: EPA recommends that the spatial scope of the cumulative impact assessment for the Mojave desert tortoise be expanded, consistent with CEQ guidance. We recommend consulting with the U.S. Fish and Wildlife Service (USFWS) on an appropriate boundary for this analysis. We understand that the USFWS will consider impacts across the range of the species for the Biological Opinion (BO) that will be issued under Section 7 of the Endangered Species Act (ESA). BIA may wish to incorporate information from the BO into the FEIS to improve this analysis. However, we note that the application and interpretation of the definition of cumulative impacts under NEPA and ESA[5] differ, and BIA should ensure the analysis in the FEIS is consistent with CEQ guidance.

Additional Comments

- The DEIS contains contradictory information regarding the capacity of the water wells. Page 2-33 states that the secondary water source test wells are estimated to have the ability to deliver water at 1,000 to 1,500 gpm, a capacity *greater* than the existing proposed use well, however Page 4-14 states that the existing proposed use well is capable of providing more than 1,700 gallons per minute (gpm) of water, which is obviously not less than the amount cited for the secondary water test wells on p. 2-33. The FEIS should clarify this. It should also provide additional information regarding the likelihood/frequency that the unimproved road to the secondary wells would be utilized, and ensure that mitigation measures are included to ensure desert tortoise do not get crushed on this road.
- The induced growth (indirect effects) associated with the additions to the Travel Plaza that electrification would support (p. 2-19) should be disclosed.
- In several places in the DEIS, there is reference to compliance with applicable federal, state and local laws and regulations, or with Laws, Ordinances, Regulations and Standards (LORS). Because the project is on tribal land, it is important to identify which laws are applicable, and if laws are not applicable, to identify the specific regulation or standard that is being specifically adopted for the project.
- In many places throughout the DEIS, there is reference to using the "respective methodology prescribed by NEPA". NEPA does not prescribe methodologies, so this wording should be

[4] Council on Environmental Quality, "Considering Cumulative Effects Under the National Environmental Policy Act, January 1997. Available: http://ceq.hss.doe.gov/publications/cumulative_effects.html

[5] Cumulative Impact/Effect (NEPA) – The impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. (40 CFR 1508.7)
Cumulative Effects (ESA) – Effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02).

amended.

- The DEIS also notes that the drainages onsite flow into the California Wash and then into the Muddy River (p. 4-17). The DEIS also states that "The Proposed Project does not contain, nor is tributary to, any waterbodies that are on Nevada's 303(d) list for exceeding state water quality standards (Nevada Division of Environmental Protection 2009)", but notes that the Muddy River is considered impaired and is on the 303(d) list (p. 3-16). This inconsistency should be corrected in the FEIS.
- EPA previously recommended that water conservation features be included in the office and maintenance building's bathrooms and that, if landscaping will occur around the office, xeric or drought-tolerant native landscaping be used. We continue to recommend that low-flow toilets and faucets be installed in the offices and maintenance buildings, and that any landscaping minimize the use of irrigation water.
- EPA previously commented against the use of single-sided printing for the Administrative DEIS, and we note that the DEIS also uses single-sided printing. The BIA, as a federal agency, is subject to Executive Order 13514 - Federal Leadership in Environmental, Energy, and Economic Performance (October 5, 2009) which specifies that it is the policy of the United States that "Federal agencies shall... eliminate waste....". Additionally, the Federal Acquisition Regulation (48 CFR 23.703) states that agencies must "Promote cost-effective waste reduction...". We recommend that the FEIS be printed double-sided.

This page intended to be blank.

APPENDIX D:

PUBLIC MEETING TRANSCRIPTS

This page intended to be blank.

Reporter's Transcript

for the

Public Meeting for NEPA Environmental

Impact Statement for the Proposed

K Road/Moapa Band of Paiute Indians

Photovoltaic Solar Facility,

Clark County, Nevada

Held on Wednesday, December 14, 2011

Location: Moapa River Indian Reservation

Reported by: Gina J. Mendez, CCR 787

CHAIRMAN ANDERSON: I'm glad all of you showed up and the others that were able to go ahead and go out to the site and visit that, I'm glad you guys were able to go out there and see the site also.

You know this has been a long project that we've been working with for the past few years, I'm glad to see the full cooperation that I've had from everybody here, it's great to have all these agencies coming here to go ahead and talk with all of them and work together on this project and see everybody's support on this. It's really great for me to go ahead -- you know, for me it makes me feel good to understand that we're all on the same page here.

We all want to accomplish the same thing here and we're trying to go ahead and produce solar, which is one of the biggest things that's been going on right now and it's kind of an issue here with us dealing with pollution and yet we're trying to set that example and say we're trying to go and do something working with Mother Earth, working with Father Sky to go ahead and generate something that's combining our culture, our way of living, combining that with today's technology, to go ahead and bring them together and work with it, you know, in harmony.

To go ahead and make sure that this project

is going to go through and working together to show it has minimal impact on the land and the sky and the earth and the rocks and the animals. How that affects everybody with pollution compared to how we're working towards cleaner energy and dealing with all that, working with everybody here, combining everything that we have with our own cultural resources as well as our own people to go ahead and --

You know even though we're a small tribe we can still go ahead and do something that's -- we can show to other tribes, bigger tribes, other people that want to be involved with this to set that example to show how things can be accomplished by working together and it's really great to be working with Amy and with everybody else here that's been working with this project so well. K Road and other agencies have been cooperating with us, everything we've asked or need we're able to go ahead and get enough help when we need it and I'm really grateful that's what we have here.

The whole process that we've been dealing through the whole year has been working towards the protection of our tortoises and that's been the issue that's been coming along a lot to see what we're going to do with them. The main purpose of this is to go ahead and make sure that we keep it on our land. We

want to make sure we take care of our own animals instead of pushing them off to a different area where something might happen with disease or overpopulation or anything like that that might destroy our animals that come from our land.

So we're trying to do everything we can to preserve them to make sure that they're able to stay on our land so that way we can go ahead and take care of our animals so that way we can rest assure that nothing will be able to happen based on the fact that we're going to go ahead and build this plant and just shove them off to some area where we don't really know or care about them anymore. So I want to make sure that we do everything that we can possible to make sure that they stay here on our reservation.

And the whole process going through this has been -- to me it's been very fast and I can't believe it's already December. I remember the last time I was standing here talking we were dealing with the scoping meeting that we were talking with earlier and now here we are dealing with our draft EIS to go ahead and talk about that and it's just been, you know, very, very quick, but I'm glad to see everything is progressing the way it's supposed to.

And, again, if anything was to happen, we're

more than willing to go ahead and cooperate with anybody for anybody that has any questions about this whole project, you know, if anybody else has any questions about this here, they're more than happy to come by my office anytime. I always try to have an open door policy, not just for our tribal members, but anybody else that has questions about this because I want to make sure I'm not hiding nothing from nobody. I want to make sure everybody understands where we're at on this with and how we're proceeding to go ahead and continue on with this.

Once this project is completed, we'll be able to go ahead and start working out of our facility and be able to continue on with solar. From there it's just going to go ahead and continue on and hopefully we'll be able to go ahead and have more of a better benefit really towards our people here and to provide jobs, not just jobs for people here on the reservation, but to go ahead and get them started towards a career, but to get our other people involved and to understand how important it is to have solar out here and how important it is to our own people to understand how we have that connection, again, Mother Earth and Father Sky for people to carry that with them wherever they go.

You know, talking from people from

geologists to hydrologists, from people that have been working on our land and been mapping the area for years, decades, and have them willing to come to us and work on now to go ahead and involve our youths so that way our youth will understand what our land is all about and what our people is all about.

Once we have that connection going with -- our people can go ahead and work towards having our youth understand how proud it is first of all to be Paiute and how great it is to live out here in the land out here and to enjoy the beautiful sky every day, but be able to understand how to work with the rocks, and the earth, and the animals, and the plants, the sky, everything that's involved with who we are, that's who we've been connected to all this time and combine that with the new technology we have today and have them carry on that tradition so that way it won't die off with the people, you know, with what we have right now.

Again, this is going to be for generations to come, this is going to be something that's going to be here for a long time, and I want to go ahead and make sure that, again, that I do everything I can to work with everybody here so that way we can go ahead and start our groundbreaking ceremony and invite everybody out here to go ahead and enjoy what we're trying to

accomplish here on the reservation.

And so once again thank you all for coming out here and thank you for everybody else that was able to go out to the site visit to go ahead and see everybody out there to have them physically see what we're all about and I'm glad to see the people from DC show up and have them actually physically see what we've got out here to show them this is who we are and this is what our land is and this is how we want to progress.

So, again, thank you for coming out here and I hope you all have a safe journey home and you all have a good evening. Thank you.

MS. GILLETTE: Thanks everybody. I'm Jodi Gillette, I'm from the Assistant Secretary's Office with the Department of the Interior, the assistant secretary for Indian Affairs, I'm the deputy assistant secretary and I'm just here because we have a lot of work in front of us and I'm wanting to just tell everybody how excited and thankful I am for all of the work that's been done to this point and I thank the Chairman for the hospitality that he showed us here today.

Knowing that President Obama has put forth an agenda that really talks about the energy security for our nation in the future we are really excited about

this project because not only have we looked at all of the different ways that we can diversify renewable energy across America, we really worked hard to try to find places where that can intersect with our other policy objectives of advanced Tribal Nations and that government-to-government relationship is something that is very important and very -- we hold very sacred in the way that we conduct business at the Department of the Interior.

So with the way that we have been proceeding on this project in particular is that this is really one of the first of its kind, Secretary Salazar had asked us to pay close attention to what we could develop on Indian land with 54 million acres in trust in the Department of the Interior on behalf of Indian Tribes and the BIA. We manage all of those federal lands and we still are looking for our first success in solar development.

So this is an extremely important endeavor. I want to thank all of the people. I want to especially thank Tony Walker (phonetic) who is my counselor in the Secretary's Office, his efforts in working with all the people, Amy Heuslein, the folks at BLM.

I mean, I know that you guys have spent an inordinate amount of time working and really trying to

break through to some new ground and some new accomplishments with this project. It is still in a preliminary stage as we just did the draft EIS portion and we want to hear from the public.

We also think it's really important to talk about these things as we're developing and going through the different phases of how we get to completion, but I think the Tribe has done a tremendous job working with K Road and others to make sure that all of the people that should be aware of the project are aware of it and that we can work together as a partnership in a collaborative manner so that we can reach the goal of having cleaner energy especially as the Chairman so eloquently put it for our children and for our future for this country.

So thank you so much for having me join you here today and I want to thank you for giving me some of your time.

MS. YOUNGBEAR: Good evening, my name is Kellie Youngbear. I'm the superintendent of the Southern Paiute agency and what we do is we provide technical assistance to the Tribe. We have tribes -- two tribes in Arizona, which is Kaibab and San Juan Southern Paiute Tribe and we also have one in Utah, which is the Paiute Indian Tribe of Utah, which is the southern part and they have five bands within their

tribe. Of course, we have the Moapa Band of Paiute and also the Las Vegas Paiute Tribe.

With this project what we do is we have trust responsibility of the trust resources on the land. So what would trigger anything for us is right of ways, permits, leases and then which would also include NEPA, which is Amy Heuslein. So our involvement with this project would be those documents that they required the agency to sign. So that's how we've been involved. We're also part of the NEPA process and cooperating agencies.

I'm excited to see this project come to fruition so it would be good to see, like he said, the groundbreaking ceremony. So I look forward to it. Thank you.

MR. CHANDLER: My name is Mark Chandler, I representative the Bureau of Land Management and our role here as a cooperating agency with the Tribe and BIA and we're bringing our expertise in processing NEPA documents. We're bringing forth our staff professionals who are knowledgeable in cultural resource information, wildlife information, land which is what I do, visual resource management, and we look forward to being part of this project because this is a real gem of a project to be working on here.

You know, when they first tossed it, another solar energy project, this is the first one on tribal land, this is an honor to be part of and to be able to be really appreciative of being part of that process, the NEPA process.

Also I want to let you know here tonight is our field manager Bob Ross, he'll be signing right of way docs, right of way grants, our role here is we'll be granting the transmission land portion of the project, BLM maintains a right of way corridor for the project so we'll be granting that. The transmission line is about five miles long in terms of the -- or the core we'll be managing, we'll be managing another half mile of services in the state.

So that's what we'll be granting as part of this process. So we'll be here tonight and look forward to any questions you have.

MS. HEUSLEIN: Good evening everyone, thank you for joining us tonight, we really appreciate it. My name is Amy Heuslein. I'm with the Bureau of Indian Affairs, the Western Regional Office out of Phoenix, Arizona, I'm also the regional environmental protection office and lead project manager for this Environmental Impact Statement process.

Some of you were here hopefully last

February when we had public scoping meetings, tried to input -- solicit input from the public regarding this project. Now we are here eight-plus months later with a document for you guys to take a look at. It's a Draft Environmental Impact Statement or what we all an EIS and that EIS is out for public review. We released that document via the federal register, which was on November 25th, right after Thanksgiving and it's out for the public to look at for a 45-day public review, that will end on January 9th, 2012.

So you have that opportunity for you to guys to review the document, it comes in various forms, you can either get a hard copy of the document, CD of the document, or even you can get it online, you know, if you go to a Website that we have so just to let you know that is available.

Also I'd like to thank those folks who are here tonight who have joined us, not only Bureau of Indian Affairs folks, but our field agency, one of my staff Gary Cantley who is regional archeologist from Phoenix, but also our Washington, D.C. folks Tony and also Jodie here, how we really appreciate them coming out to visit us.

And then our cooperating agencies, we have the BLM with Mark being here, Mark Chandler, two of our

cooperating agencies, the other cooperating agencies couldn't make it tonight. They are the Environmental Protection Agency and the U.S. Army Corps of Engineers, they're also partners with us on this particular document.

I want to go ahead and talk to you all regarding what we're doing here with this Environmental Impact Statement process and why we're doing this and why we're here. There is a law out there that federal agencies must comply with and it's called the National Environmental Policy Act, what we termed NEPA, it's an acronym we use all the time.

This law was first passed in July, I'd say 1969 and it was signed in 1970 first by then President Nixon. So it's been on the books for well over 40 years now and it hasn't changed much in those 40 years. Part of that process is we have some regulations that we have to work with and those regulations tier down to some policy and guidance to each of our agencies and the BIA has certain policy and guidance for us to develop these documents.

So from that perspective and that background that's how we are having to go through this process. There's several other laws out there that are going parallel with the EIS process in compliance with NEPA,

one is called the Endangered Species Act and that deals with the species we're dealing with right now called the desert tortoise, you heard the Chairman mention about that. We also have another law that's called -- dealing with cultural resources that's the National Preservation Act.

So those are kind of the three laws that are most important for this particular process and that we have to comply with as a federal agency before we can make a decision on the lease for this project or any rights of ways or any permits that are required that the BIA have to approve. So we have to go through this environmental process and make a decision on that before we go ahead approving any other types of documents, legal documents.

So how did we start out here in the process? Well, we began with what we call a notice of intent, that has to be a formalized publication in the federal register, which is -- a federal register is a document that publishes notices for the public and it's a requirement under the federal agencies to comply with. That was done back in February, I believe it was February 4th, 2011.

And then next we ended up having the public scoping meeting and that was held here several weeks

later after that publication right here as we're sitting here in the same room here and also we held a meeting in Las Vegas over at the BLM offices there.

What we did was gather information from the public, we had a 30-day timeframe for that, that information, any comments that came in from the public is what we utilized to help us develop the draft EIS and that document that's out on the street right now for people to review. And it's interesting to note that because of that scoping in talking with the different federal agencies and also some of the public, we came up with a different alternative than what was originally proposed by K Road for this particular project, which is Photovoltaic Solar Generation Project.

So scoping does work, you know, it brought to us an idea that maybe this is a better way of looking at this project, you know, rather than what was originally proposed. So that process came and then what did we do from February on to now? Well, our consultant will tell you some of the work that they've been doing is they've been collecting different surveys and collecting data and writing the document.

So we've looked at the document, reviewed it internally, and now we've released it for folks to be able to come into Phase II, which is the draft EIS and

that document is now what you guys have in hand or you can get a copy of or look at it online, there's two volumes.

The first volume is -- basically goes through what the proposed action is, the proposed project, some alternatives that we looked at, and then it analyzes what the effective environment is out there. So some of the resources like water, air, wildlife, cultural resources, socioeconomic concerns just to name a few, and then we look at what that proposed project will do to those resources, that's what we call environmental consequences.

So there's a chapter in the document that tells us, okay, if we build this project what are its effects or impacts to that particular resource. So, for example, the impacts to the desert tortoise, how do we look at that.

And then there's a chapter that talks about mitigation. Mitigation is, you know, how are you going to -- even though you have that impact, how can you make that better, you know, rather than, you know -- or compensate for the issue we have out there.

So it may be projecting an area or it may be dealing with some kind of, for example, during construction activities we're going to have some

fugitive dust come up from construction; so one of the mitigating factors may be to use a water truck to wet down the area so you don't have as much dust out there as an example. So all that information is in that document. So it's a pretty big document.

And then there's a Volume 2 that deals with some of the appendices and some of the other studies that we have that go to support the information in the first volume. I hope that was a good explanation of that.

After we get done with the 45-day time period, which ends on January 9th, we'll get all comments that come in from the public and then we'll look at them and address them in a final EIS and that document will tell us basically how this project looks overall and then we'll be looking at another 30-day kind of final waiting period to make a final decision on the document, which is what we call a record of decision.

That record of decision is usually given, you know, an entity within the BIA, whether it be our regional director or maybe it'll go up the ladder to our director of BIA or maybe even up further than that depending upon who wants to sign that document and that will be released and issued to the public of a determination that we've covered all the steps here for

the NEPA compliance process, we've done all the mitigation that -- and we've looked at all the data and everything looks good to make a decision of whether we chose this proposed action or we chose one of the alternatives. And that should be happening in Phase III.

And then after that happens then we'll be looking at implementing or making the decision I should say on the lease, which is the 2,000 acre site lease for the solar panels, the right of way for the transmission line or the water pipeline that we're looking at or the access road as examples and BIA will make that decision. Before we can make that decision we have to go through this environmental process first and that will help us make a determination for anything that we do in the future for this project.

The schedule on the side here, on the right-hand side, as I said we started this in February and we're here in the November through January timeframe for the documentation that you have in front of you right now as far as reviewing the draft EIS, then we're looking probably the way this is going right now about March timeframe for the next public review period and then -- and the record of decision, and then from there we're looking at probably April/May timeframe where a

decision will be made on a lease or the rights of ways for the BIA.

Now, there are some other aspects of this document, this EIS, is the BLM will be using that document too for their NEPA compliance to make their decision for that part of the project, that's the right of way for 500kV transmission line. So BLM is going to use the same document, the same EIS that we're using for our decision. So rather than both our agencies write separate documents, we come together to do one document, it makes a lot more sense to be able to do that for our actions because it's all connected. So I think from that standpoint that's a useful tool that we've done as far as the compliance aspect.

And as far as how to participate, again, we have several ways you can do that, you can submit your comments orally tonight after our presentation if you feel that you want to have a statement. If you're not comfortable with that, you can always submit to our court reporter over at the end of the table here separately.

We also are submitting comments -- you can send them to me via e-mail and my e-mail address is up there and it should be on the comment cards or any of the other written material or handouts and also you

could submit it on the comment card and leave it with us or you can mail the comment card in. And I guess the last is we have our Website up and the Website is listed down below here and you can go ahead and there's a comment -- there's a link to submit comments on that, it's another way to do it.

So we've got all sorts of options for submitting comments just like we have options of what document type you want, you want a hard copy of the document, compact disk, CD disk, or whether you want to review the document online. So we've got those opportunities for you guys to submit comments to us on this document. And, again, comments are due by January 9th, 2012 and we're in just the beginning stages of the 45-day timeframe for this review of document.

Okay. Right now I'm going to go ahead and turn it over to Chad Martin and Chad is our consultant who is preparing, developing the EIS for the BIA and BLM and he's going to talk to you about the project itself.

MR. MARTIN: One other way to comment, which Amy didn't mention is we have a court reporter here and if you don't want to talk to one of us or leave a comment card, you can give your comment directly to the court reporter and she'll take that down and we'll have that for publication.

Again, my name is Chad Martin, I'm with ARCADIS, we're an environmental consulting firm and I've been incredibly intimate with this project for the last 14 months, one week, and two days and I'm excited where we're at at this point right now, things are starting to click, and a lot of people are excited about it, and I do a lot of projects where we never see anything built and I'm hopeful that this one we're going to see it go up and everyone is going to win.

Here's an outline I'm going to go over. The need for the project, which we kind of talked about it a little bit with the Chairman, the location, the size and site, the alternatives that we looked at, the associated features with the actual solar field, the resources that were studied and the schedule which Amy has already touched on. There's also these maps that are surrounding you, some of these slides are going to reiterate that, but these are some nice close-ups if you want to look at them after the presentation.

So the need, number one need, provide economic development and revenue for the Tribe. There's going to be other benefits to the Tribe as well as jobs, should see an influx of folks over at the Travel Plaza, lunches, gasoline, you name it. There's also some local gas stations and convenience stores that will see

business from the five-year construction period that it will take to do the full build out for the project.

Another need for the project is to assist the utilities, the electric utilities, and meeting some of their renewable energy goal. One of the perks of this project is building a 12kV line, an electric transmission line from the solar facility to the existing Travel Plaza. Right now the Travel Plaza works off of diesel generators and building this 12kV line will give them the ability to get off of diesel generators and pull electricity off the grid and during the daylight hours they will be using green energy to do that so that's a perk.

So the location, Clark County as the crow flies it's about 14 miles southeast of here. It's totally within the Moapa Indian Reservation as you can see the hashed area is the reservation. The transmission line as Mark pointed out is five miles, it's totally within the reservation, within the BLM managed corridor, and then a half mile is solely on BLM land and that's where it's going to tie into the Crystal substation.

Access for construction vehicles, workers, and whatnot will be through exit 64 and that's the Highway 93 exit. We're going to utilize the county

road, it's Las Vegas Boulevard, I think that goes for about seven miles where maintenance stops, there's still a pretty good improved road up to the Crystal substation and then part of the project will be to improve the road from Crystal substation up to the solar facility, which is around five and a half miles.

This is just a better map to show you some of the land ownership in -- we have the reservation here and surrounding the reservation is all BLM land and then there's some park service land on the fringes.

This is a bird's-eye view, this is kind of a 3D rendering you can do on Google maps to give you an idea of what it's going to look like on the ground with the mountains in the background and there's another picture of that here. The existing Travel Plaza is right here and this is exit 75, this is Interstate 15 here, and then this is the existing UP Railroad. We are sitting right up in here somewhere on the other side of the mountain. So the footprint for the solar facility is 2,000 acres, an additional approximate 153 acres will be impacted for the associated features and I'll go over those in more detail.

The plan is to produce up to 350 megawatts using PV technology. I have this picture, actually it's out the front door, but this is -- we've yet to pick the

exact model we're going to use as far as PV goes. This is a pretty good basic idea to give you an idea of height. There's another photo, it's out front, it shows people standing next to the PV and this is approximately eight foot. So about a foot and a half taller than me is the height size and down. It's really great for the visual effects, from a distance anything more than a mile or so it's actually going to look a whole lot like that. So if you were to take that 3D view and bring it up to your eyesight, you'll notice that from a distance and from here, from I-15 there's the main visual impact area, you might see a gray line across the landscape, the horizon, it's really not going to stand out that much.

We're going to use single access tracker, that's where the PV panels actually rotate during the day with the sun. The facility will be hooked up to the grid via the substation so at night they'll use electricity from the grid, panels will rotate back to the beginning and it starts again the next morning.

We'll also be using fixed PV in areas where topography is not working with us as well and we'll put some of those out here as well. We're going to use both types of solar PV, the tilt and the fixed in order to reach that 350 megawatt capacity.

So why PV? Well, the main answer is it's proven technology. We've been using PV from way back when, we know it works, the banks know it works, and investors know it works. So a lot of the new stuff out there is reverting back to PV because there are some issues with the other stuff and the other great thing is the decreased need for water. We're obviously in the desert where water is an issue. We're going to use water for washing the panels two to three times a year and keeping that to a minimum.

No greenhouse gas, we'll have some emissions from vehicles, temporary generators during construction, but once this thing is built we'll have pretty much zero emissions other than 20 workers that come to and fro from work and reduced visual impacts which I discussed earlier. Here's that photo I was talking about with the people beside it. That's a one megawatt section, that's an acre, one megawatt, five and a half to six acres so 350 of those.

This is actually taken from I-15, the Travel Plaza, this is the billboard, the Travel Plaza is directly over here. This is the southern portion of the PV field and this is the northern portion, I'll come back to this at the end where I can zoom in on it, but if you zoom in you can actually see the panels right

there, when you zoom in you can really seem them stand out a little bit better. That was created using CAD 3D graphics, we put those eight foot panels in the background from a photo we took from the road. So that's from my eyesight from Interstate 15.

Some of the alternatives that we looked at. We looked at the no action, the no action is simply we don't build the facility and what are the potential impacts from that. We looked at an alternative transmission line corridor in turn with decreasing the footprint of the solar facility.

We intend to build the facility probably in three phases, where Phase I is 100 to 150 megawatts, Phase II 100 megawatts, Phase III 100 megawatts. So we would just build to Phase I and II. So we looked at that in detail. We also looked at an optional site on the reservation and we looked at some of the optional technologies that are out there, the different types of solar technologies rather than PV.

So this is Alternative 1, same location, this is mesa out there and there's a couple of ravines, washes that come off of this mesa and that's why this has a funky design to it, we're utilizing as much flat land as possible out there. This is the 4,000 foot wide BLM utility corridor, the existing utility corridor, we

would still use the same access road to get into the site; however, we would chip the substation down in order to minimize our distance to Crystal substation and we would take that to about 4.8 miles rather than having the 5.5, which follows the access road.

This is the optional site, this is the mesa, again, this is up towards the hills a little bit more, up towards the mountains. Obviously, we would put a substation close to the utility corridor and getting to the utilities as quickly as possible utilizing that somewhat impacted area.

The 12kV line here cuts across the desert, increases it from about three miles to five miles, which was a negative for us. There are several washes coming down from these mountains, which give us some flood protection issues, more sedimentation, erosion. From past reports from projects that they looked here on the reservation, it looked like there were going to be more cultural impacts possibly in that area and probably equal amount of desert tortoise were found in both locations.

Alternative technology, you've seen some of these, some of these are getting built, some are them were getting built and now they're referring back to PV. Concentrated solar, CSP, two different kinds. These

dishes can focus energy to a point right here, which in turn produces the electric energy or these type of dishes you can see in a circular manner up here, the thermal tower producing heat, steam, fluid, engines, electricity, these are the parabolic troughs and these tilt with the sun and heat, gas, fluids go into here, also a lot of water involved with these.

Number one issue is water, water, and water. All of these need a good amount of water, something that we don't have a lot of. They're not as proven, these are some of the newer things out there, less likely to get funded, and the risk just goes up on these. So the reason that we didn't look further at these technologies is stated in the PV.

So the proposed project. These are the associated features so we have an up to 300 kilovolt transmission line, there's currently two out there right now in the utility corridor, one is an alternating current and AC line and one is an AC line. Water pipeline, I'm going to point these out as I call them out. So the 500kV line is running the BLM corridor connecting to the Crystal substation and total length is 5.5 miles.

Water pipeline, this is an existing well that the Tribe is using currently, it provides water to

the Travel Plaza. There is an existing water pipeline here as well as a road, an unimproved road. We would like to build a water pipeline directly to that well and paralleling that would be the 12kV transmission line that connects the substation to the Travel Plaza and we would build that adjacent to that existing road and existing water line in order to reduce the impacts.

We have about 40 acre substation operation and maintenance building all the infrastructure for the project will be located there. This is the access road, this is an existing road, it's a utility road used by all seven utilities that are out there and we would divert from this point up on the mesa. So our only impacts there are when we cut through the corridor and come upon on the mesa.

With the O&M building we're going to have a septic system, it'll have a bathroom for the workers and things like that.

The evaporation pond, the water coming out of the well is high in sulfur, which can leave a film on the solar panels when you use it for washing. So we're looking at a reverse osmosis system to take sulfur out and there is a discharge from that process that will go into this evaporation pond. It will be sized accordingly to the amount of water needed for the two to

three times a year washing. It will be netted for bird impacts, things of that nature or other animals that can get in there and as needed it would be cleaned out and then taken to an approved landfill.

The entire 2,000 acre footprint will have a security and/or perimeter fence, this is your typical six to eight foot fence with the three barb wire across the top, it will also have a desert tortoise fencing on the bottom, 24 inches, with 18 buried in the ground. And I'll get into more details on that, but in order to stop any tortoises from ingress or egress, we're going to move everything out. And then there will be some roads within the solar facility to access the panels and things like that.

Footprint for the 500kV line, construction corridor for about 150 to 175 feet, once it's built it will be maintained to something like 100 foot wide corridor.

This is so preliminary engineering, we're looking at 24 structures, these haven't been pinned down yet, but we're looking at lattice or maybe a three pole, metal pole structure. This aerial is also right back here if you want to take a closer look at it. It also shows some of the other existing utilities that are in there. I want to say there's five transmission lines

and now there's three pipelines, two natural gas and one petroleum that was recently built, we just came through that area last month. So it's going through restoration right now.

This is preliminary design, the gray shaded areas are tracking PV or fixed PV. This photo here gives you a little bit more detail about the O&M building parking, evaporation pond, again, this is a blowup of this area right here.

These are some of the washes. Most of it is surface wash because it's up on a mesa, we're not getting any mountain runoff. So any runoff comes off this site is created on the site and these are areas with steep sides just probably unbuildable for PV so we're stretching as much as we can to get the 350 megawatts of flat land.

So some of the resources we studied in the EIS. We looked at air quality, climate, soil, surface and ground water, noise, biological resources, cultural resources, social and economic conditions, environmental justice, resource use patterns, energy and minerals, transportation issues, special management areas like parks and things, visual resources, and then public health and safety.

I'm going to touch on some of the resources

where we felt that we had some impact, we're looking at mitigating these impacts to either minimize or alleviate all impact all together. Air quality, soil, and biological were some of the ones we focused on. We heard the most back from our scoping meetings as far as comments from the public and from other agencies.

Biological resources, the big one out there is the desert tortoise. So we did -- Fish and Wildlife conducted all surveys last year October and on 2,000 acres we located 26 adult tortoises and those are tortoises over 160 millimeters in size.

This year in October we looked at translocation, our primary translocation area, which is 6,000 acres, it's located on the reservation about four and a half miles to the northwest of the site. We also -- we found six tortoises out there and we also looked at a secondary site which is just north of the mesa where the solar facility is, 2,500 acres and we also looked at 2,500 acres to the south of the site. So all together we have 11,000 acres.

The plan is to have our primary relocation area should we need more, find more, and we don't have the stocking capacity to refill the 6,000 acres, then we are going to use the 2,500 acres to the north or south and use one of the north or south areas as our control

area.

Control area is simply something we'll monitor for five years, determine -- to determine that if there's an impact in the relocation area, say a major die-off to resident or relocated tortoises we can look back at that control area to see if something is going on there as well. What we're trying to determine is is the impact due to us relocating them or is it something that's common to the entire area.

We have drafted a Desert Tortoise Translocation Plan that has been sent to a lot of cooperating agencies and Fish and Wildlife and we are currently going through a draft of the Bird and Bat Conservation Strategy, which is also known as the Avian Bat Protection Plan.

This is a site and this is all the surveys on the site that we did last year October 2010, we completed this entire area and at that point in time as Amy pointed out we were focused on a transmission corridor through here. During the scoping process we ended up getting back up into the BLM corridor. So this year we looked at that potential line, we looked at the access road, we looked at this new water line that moved, and then the 12kV line to the Travel Plaza.

The green dots are burrows, the red dots are

actual desert tortoise sightings. And you can see that they are closely attributed to the drainages, some of the better soils that are affiliated with the drainages.

So desert tortoise translocation in a nutshell, we would need to start in the spring or the fall, there's an ideal time to do it, April/May in the spring or September/October in the fall. So that gives you two months to move what we think could be up to 50 tortoises and find resident tortoises at the relocation sites and also radio tag them as well.

The first step is to build a desert tortoise fence around the entire perimeter. That would be done with biologists on the ground in front of the crews clearing any tortoises out of the way and excavating any burrows that might be in the path of the fence.

Once that's complete we'll probably go out there and build quarantine pens. Looking at the number that we need to move and the time we have to move them, we're thinking 15 pens. These pens will be temporary for us to go out, find the tortoises, place them in the pens 10 to 15 days, do a blood test if necessary, do health assessments of the tortoises, put radio trackers on them, get the tests and all the information back, if they're all healthy we move them to the relocation area, put them where they need to be and come back in and

continue sweeping the 2,000 acres.

The sweep is done with -- it's going to take a lot of bodies, it's five meters, which is 15 feet apart, groups of three or four biologist will walk side by side with an approved desert tortoise biologist behind them. These are the folks that are permitted to handle the tortoises. They're capable of doing health assessments, place some radio transmitters on them and there's not a whole lot of these folks out there, they're few and far between.

So we'll be running small crews with them managing the crews. We'll sweep the entire 2,000 acres excavating every burrow that's found and then caving the burrow in, moving the tortoises to quarantine pens and then taken over to the relocation area. Every time you make a pass and you find a tortoise, it's going to require another pass. So we're looking at potentially two to three passes at 15 foot intervals over 2,000 acres.

So timing is crucial, that's also why we're looking at a phased approach, if we run out of time or we're finding more than we thought, we may go to the temporary fencing where we only concentrate on Phase I of the project. Build Phase I, get it up and running, have temporary desert tortoise fence in between, and

then in the next window we go to Phase II and Phase III until we get it completed.

Once we get radio transmitters on these guys we're going to monitor them for five years. We will monitor a patrol area as I talked about earlier. The resident tortoises at the relocation area, the relocated tortoises.

This is a snapshot of the areas, kind of turned it a little funny so we can get them all on one page, but here's the Travel Plaza right here, I-15, and this is that big utility corridor that runs through the reservation. So our primary location is this 6,000 acres, this is our secondary location, and a potential control area. These two could work interchangeably.

Cultural resources, we did full cultural resource study, pedestrian surveys, there have already been a lot of cultural resource surveys out there for other projects. The areas that were not looked at we picked up in our studies last year. We also went out this year and did the transmission line corridor, the access roads, and 12kV line. A lot of help from BLM on this and BIA and we were able to get a letter to the State Preservation Office and they concurred with that there will be no impact to cultural resources.

Air quality, we're obviously going to have

fugitive dust from construction. We're going to mitigate that through water control using water trucks, a stop work potentially on incredibly windy days, gusting over 30 to 40 miles an hour. We have a list of BMPs that will be in plan that we utilize to bring that impact down.

The next thing about solar, obviously, and PV is there's no longer term effects. We're going to have short-term emissions from the construction vehicles, maybe temporary generators on site, but once everything is up and running those short-term effects are gone or reduced and there are no real long-term effects.

Water resources during the construction period, five-year period we're looking at a maximum of around 72 acre feet a year. That's looking at 20 to 40 for panel washing and operations and then about 20 acre feet a year extra for construction water and things like that. Once everything is up and running we're looking at a maximum of 40 acre feet a year. The Tribe has been allocated 2,500 acre feet a year, that 72 and long-term 40 comes out of that 2,500, it's not an addition to.

There could be some short-term downstream water quality issues, obviously, during construction before permanent -- we call them best management

practices or BMPs are in place during rainstorm, you might see some downstream washing, that's as I said all surface water from the mesa. The six drainages that come off have been deemed nonjurisdictional by the Corps of Engineers, which basically means they're not waters of the U.S.

One of the plans that we'll have in place that will eventually be in the EIS is the Storm Water Pollution Prevention Plan, this will detail the BMPs that will be in place. The rock gabions within these drainages which are going to help the short-term downstream effects, sedimentation, it's going to stop sedimentation because that berms up around to divert water, to slow water, and once infrastructure is in place we will also have a restoration plan that we will try to come back and revegetate as much as practical in order to decrease that surface water runoff.

Soil kind of goes hand in hand with this project with surface water, short impacts during construction, and then long-term impacts due to depletion of vegetation. There's no doubt that we are going to impact surface soils and vegetation will be void in a lot of the areas underneath the solar panels. The restoration plan is going to look at trying to bring some of that back, maybe different species that are more

prone to shade; however, everything will be maintained to 12 inches or so in order to not impact the actual panels producing solar.

So off the roads and off the actual solar facility will be mitigated using the water trucks we talked about. And when scraping -- if we scrape a road or an access road or areas within the solar facility that are going to require shaping because of the topography because it's not flat enough to put the solar panels up, we'll kind of side stack that soil because it's going to be better topsoil when it's out there. Once the infrastructure is in place we'll try to put that soil back in place to try to keep that balance, there are seed stock in that topsoil, which will allow some of that restoration to come back.

Here's more detail on the mitigation focusing on the potential impacts that came out of the EIS process, the Desert Tortoise Translocation Plan, Bird and Bat Conservation Strategy, Weed Management Plan, Site Restoration Plan, which will be temporary site restoration and then looking at long-term restoration.

Decommissioning Plan this is something that will be put in place, basically outlines what's going to happen in 35 to 50 years when the site is either not up

and running anymore or going to improve it, upgrade it, whatnot. So that will go into that plan, that will probably be more of a living document as time goes on things can change.

Storm Water Pollution Prevention Plan, which I talked about and Spill Prevention Control and Countermeasure Plan, this is basically for hazardous materials, oils, fluids, hydraulic fluids, things like that during construction, if there's a leak or a spill of some sort, this plan tells you how to take care of it, how we remedy it. It also has an operational side of it for things that are on site that could be hazardous or have hazardous materials and it will address that as well.

Other documents found in the draft EIS Appendix No. 2 -- I'm sorry Volume No. 2, lots of appendices, A through H, I believe. But we have more details on the policy rules and regulations pertinent to the Tribe, pertinent to the BLM, the different landowner situations that we have here. Some apply to one area of the project and don't apply to others.

We have the cultural resource documentation, there were two reports completed. Visual Contrast Rating Sheets, that came from doing a visual assessment back here on this board right here, we downloaded 10

meter digital elevation models. Those are 3D kind of models, you throw them into a computer system and we know the height of the solar facility and we know an average person that's six feet we can tell the computer to basically say show me within a five to 10 mile radius where the site can be seen and that's what that diagram in the back shows you. As you'll see it's few and far between and it's basically the higher elevations at two to three miles away.

Air quality tables are there, that's the construction, operation tables that they used to come up with the numbers in the draft EIS.

The biological assessment basically outlines that whole desert tortoise survey that we did as well as looking at other species.

The U.S. Corps of Engineers Jurisdictional Determination Report, that's the waters of U.S. issue and the consultation there and their conclusion on that.

The Public Scoping Report that we did last year, it's got all the sign-in sheets, the court reporter, the whole bit.

Public Comment Agency Correspondence, these are letters that we received over the last 10 months, nine, 10 months from agencies, from the public, from environmental groups, you'll find them there.

And then the Environmental Hazardous Radius Report, this is basically a study -- it's all EDR, you do a study to determine if you have any historical hazardous issues out there, we found zero. That full report is in the appendix.

So we pretty much went over the schedule, we're looking for a final EIS in April, May of next year and then a BIA/BLM decision on the lease agreement and the utility right of way somewhere around May of 2012 and if all things go good potentially start looking at minor construction and fence building maybe next summer with a relocation next fall.

And that's it. This is another project Website address. And at this point we'll entertain any comments from the group if you have any?

Yes, ma'am?

MS. SIMMONS: Can you get those presentations on disk or can you send us anything?

MR. MARTIN: This presentation?

MS. SIMMONS: Yeah.

MR. MARTIN: I'm sure we can, yeah.

Oh, I'm sorry, so we can have a record of it will you say your name.

MS. SIMMONS: My name is Vicki Simmons, I'm a tribal member of Moapa Band of Paiute.

MR. MARTIN: Yes ma'am?

MS. FELDMAN: My name is Jane Feldman, I am a spokesperson for the local group of the Sierra Club and I really appreciate the presentations that you've made tonight and thank you to the hospitality for the Tribe for having this public meeting here, thank you.

I have a couple of questions. The desert tortoise, of course, is on the endangered species list, there's going to be a lot of interest in that as we go through this whole process and I don't have a lot of comments about that, we'll let the biologists cover that. But one of the things that's come to my attention very recently is that there is a sensitive plant that is on the footprint of the project and it's called the Beaver Dam Breadroot and I didn't hear anyone talk anything about plants tonight at all.

I know that the Center for Biological Diversity made comments in scoping about two different plants, the bear poppy and the three-quarter milk-vetch and I understand that there's been recent surveys and I don't know what plant surveys that you have available, I and a biologist at the Sierra Club working as a volunteer didn't see any of the surveys in your document online, maybe we missed those surveys.

But it looks like from the information I've

gathered from the volunteer biologist -- botanist that there's no bear poppy or three-quarter milk-vetch on the footprint, but it looks like the Beaver Dam Breadroot is there and there's going to be considerable interest in maintaining, accommodating, avoiding that particular plant.

That plant is on an at-risk tracking list that the Nevada National Heritage Program has, it's been on that list since 2009. So it's a relatively recent listing. Do you have any information to give me about that at all.

MR. MARTIN: I do not. We did not do surveys for state-listed species primarily because they're state-listed species, they're not applicable to tribal land. Would you mind sharing your source for the Breadroot?

MS. FELDMAN: For the Breadroot?

MR. MARTIN: Yes, because we had spoken to the Tribe about different species and --

MS. FELDMAN: We can talk about that in private and there will be another opportunity tomorrow night for other people to give firsthand information about that?

MR. MARTIN: Sure.

MS. FELDMAN: And I've done some real

surface investigation about the Breadroot, it's Pediomelum Castoreum -- I don't know if I'm saying that right -- and it has a pretty broad range, but it's very rare and there's also expectation that there's other places on reservation land where the plant would exist and there'd be opportunity then for protecting that, those other populations, but it's certainly a plant that's going to have some interest.

One of the things that happened also when we were reviewing these documents is that since we didn't have the plant surveys and we didn't see the translocation plan, the draft plan, the biologist that I've been working with so far anyway weren't able to really give a lot of thought to that and so we're going to want to see those draft plans and you said that they are in the appendix of Volume 2?

MR. MARTIN: They will be.

MS. FELDMAN: They will be, they're not there yet. Okay. So I didn't miss them, they're not there. When are they going to be available to us?

MR. MARTIN: We're actually meeting with Fish and Wildlife tomorrow to talk about the draft plan so hopefully soon.

MS. FELDMAN: What about the 45-day comment period?

MR. MARTIN: What about it?

MS. FELDMAN: Will we have 45 days to be able to comment on the draft mitigation plans?

MS. HEUSLEIN: Either those plans depending upon because they're part of our process to go through with the Fish and Wildlife Service under Section 7 of the Endangered Species Act, that plan will probably be released with a final EIS so -- and there's a time period, a public review during that timeframe.

MS. FELDMAN: So we'll be able to look at it and provide formal comment at that time?

MS. HEUSLEIN: Correct.

MS. FELDMAN: Is that going to be 45 days?

MS. HEUSLEIN: No, it will be 30 days.

MS. FELDMAN: Okay. And Golden Eagles the initial finding was that there'd be no significant impact to the Golden Eagles.

MR. MARTIN: 2009 aerial surveys by Nevada Department found remnant nests nine to 10 miles away --

MS. FELDMAN: So your Avian and Bat Plan is going to include what species?

MR. MARTIN: It's basically going to outline BMPs for predation control, focusing on desert tortoise as well. It's going to look at design for transmission towers and such to reduce impacts. It's going to look

at other impact-reducing agents to minimize any impacts, mainly nighttime bats potentially. We're going to have minimal light out there at night.

MS. FELDMAN: Another comment that was made is that this is all habitat for Gila Monsters and I know that they are really difficult to manage, but there was some talk about being able to excavate and move the Gila Monster. Has there been any -- I didn't see anything about the Gila Monster in the documents so far.

MR. MARTIN: Gila Monster is not on our radar, Fish and Wildlife hasn't brought it up. I, obviously, haven't seen one out there.

MS. FELDMAN: You won't. Professional herpetologists spend their lifetime in the field and don't see them.

MR. MARTIN: So we have no information on the Gila Monster.

MS. FELDMAN: Okay. Thank you.

MR. MARTIN: Yes, sir?

MR. DABODA: Darren Daboda, environmental coordinator for Moapa Band of Paiutes, I have a couple of questions.

You talk about erecting a transfer station pre and post construction to handle all the materials coming in, do you have a transfer station?

MR. MARTIN: What do you mean by "transfer station"?

MR. DABODA: A fenced-in compound with either recyclable bins or the closed lids so you can have vector controls of predators from crows to coyotes because we know they're out there.

MR. MARTIN: That will be addressed, the Avian and Bat Protection Plan talks about that. The Storm Water Pollution Prevention Plan will talk about that and the Hazardous Materials Plan will talk about that. Probably more so in the hazardous materials.

MR. CHANDLER: Also the construction -- when the CIC -- it's usually also covered in the CIC construction implementation plan. The builders of the project will usually have a construction plan deal with the waste -- deal with the waste associated with the construction process.

MR. DABODA: Okay. And then also on the biological aspect, are you going to have escorts coming in, biologists, escorts or anybody coming in?

MR. MARTIN: Yes, sir, that will be part of the translocation plan, yes.

MR. DABODA: Is there going to be also a seasonal speed limit on the access road going up to the facility?

MR. MARTIN: There will be. It'll be also in the translocation plan, we'll manage that with the Tribe as well.

MR. DABODA: My last question is, are you looking at paving the road because some areas of the access it's -- the soil is not that good, you're going to have a lot of dust. The visibility for tortoise activity especially the hatchlings you're not going to be able to see.

MR. MARTIN: Some of the areas of the road that you're talking about will be improved most likely with aggregate.

MR. DABODA: Covers too?

MR. MARTIN: Covers for any drainages.

MR. DABODA: That's all I have.

MR. MARTIN: Ma'am?

MS. SIMMONS: I want to ask you about any aircraft flying over the area. Do you know of any aircrafts that are flying over this area, small commuter planes from the St. George area, how will that affect -- is that in your study?

MR. MARTIN: I don't know of any. We did -- in our study it looks at all the airports within a 50 mile radius. We also sent letters to folks, like, Nellis Air Force Base to make them aware of the project.

These things absorb light rather than reflect it like the mirrors, remember I showed you some of the other technologies. So you're not going to have that reflection. So the assessment is there would be no impact to a flying aircraft.

MS. SIMMONS: Are they allowed to fly over that area if they want?

MR. MARTIN: My understanding -- and I don't know the 100 percent answer on this, my understanding is they are not allowed to fly over the reservation land. The military is not and I don't know about personal aircraft.

MR. SPOTLESON: Vinny Spotleson, I live in Henderson. I've been working with the Tribe for a long time on the Reid Gardner Power Plant. So we're really, really excited that K Road is out here and folks are out here, you know, excited to create jobs and build an alternative to coal.

I just want to thank the BIA and the BLM for being out here and being engaged in the project and thank the developers, they are -- they've had a meeting with the environmental committee already and there's a second one tomorrow so they are getting out there, they're very proactive in working with the environmental committee and we really appreciate it.

Just a suggestion for BIA or BLM on this project and future projects is so much of the controversy is coming around, like, the tortoise and these species that earlier we have these desert tortoise relocation plans, the more time we have to comment that avoids the problems. As we've seen in other projects in other areas that's really what the controversy is over in a lot of these projects.

So I think if we have more time and if we're excited and we're glad that the developers are working with us and willing to work with us and show us these things, but if they weren't it could be a huge problem for other projects. So I want to thank the developers for being so proactive. I just make that a warning for the future because that is what we're talking about on all these large scale projects and thank you so much.

MR. MARTIN: Well, we have 30 minutes, I'll be here, the panel will be here, if you have more questions, please come up and talk to us, take a look at the maps up close if you'd like and let us know if you have anything else. We appreciate your time.

* * * * *

REPORTER'S DECLARATION

STATE OF NEVADA)
) ss.
COUNTY OF CLARK)

I, Gina J. Mendez, CCR No. 787, a certified shorthand reporter, do hereby certify that I took down in shorthand (Stenotype) the proceedings had in the before-entitled matter at the time and place indicated; and that thereafter said shorthand notes were transcribed into typewriting at and under my direction and supervision and the foregoing transcript constitutes a full, true, and accurate record of the proceedings

IN WITNESS WHEREOF, I have hereunto set my hand in my office in the County of Clark, State of Nevada this 3rd day of January, 2012.

/S/Gina J. Mendez

Gina J. Mendez, CCR No. 787

Reporter's Transcript

for the

Public Meeting for NEPA Environmental

Impact Statement for the Proposed

K Road/Moapa Band of Paiute Indians

Photovoltaic Solar Facility,

Clark County, Nevada

Held on Thursday, December 15, 2011

Location: Town Hall Offices of the

Bureau of Land Management

Reported by: Gina J. Mendez, CCR 787

MS. HEUSLEIN: Good evening. My name is Amy Heuslein, I'm with the Bureau of Indian Affairs Western Regional Office in Phoenix, Arizona and I welcome you to our public meeting here tonight here hosted with BLM at their offices, the Southern Nevada District Office. So I welcome you and I thank you for joining us.

We're here to talk about and get your comments in regards to a Draft Environmental Impact Statement for the K Road Moapa Solar Generation Facility. This is a proposed project that's being looked at for the Moapa River Indian Reservation here in Clark County. Moapa River Indian Reservation is located about an hour northeast of here and basically the proposal is to build 350 -- up to 350 megawatt facility. It would be located if you all know where the Moapa Travel Plaza is off of I-15 where you exit to the Valley of Fire, in that general area, and we'll give you more information in regards to the exact location and some background.

We're going to give a presentation tonight to be able to give you some more information on the project. We do have posters in the back and also some light refreshments so please enjoy that.

I'm going to have some other speakers here

to introduce their issues and background on the project and then we're going to open up for any public comments and so I encourage you to listen to us tonight, take this in, and provide us any feedback. There's a number of ways for feedback and I'll tell you about that in a little while also.

With that in mind I'd like to introduce our first speaker for this evening, it's my honor and pleasure to welcome the Chairman of Moapa Band of Paiute, Chairman Anderson.

CHAIRMAN ANDERSON: Thank you very much, Amy.

First of all, let me go ahead and welcome all of you for coming here tonight to go ahead and see what we're trying to go ahead and work on right now on our reservation. Like she said, we're located outside of Las Vegas, northeast of here and we have over 70,000 acres that we have available.

Originally that was set up back in 1873, it was originally 2 million acres that we had set aside for us, but 1875 was when the government reduced it down to over 1,000 acres, which is where our general population of our people are right now.

After that let's go back to say during the Carter Administration what happened during that time

they were able to go ahead and give us over 70,000 acres for our people, for our reservation land to expand it and the main purpose for that was for economic development. And there's been very little, like she mentioned, we do have our Travel Plaza that's located outside of exit 75 and that's been the main area for our income that's been coming in to our people and pretty much we're relying on the government for grants and other monies available to go ahead and fund other projects that we have on the reservation.

But when this project came along I wasn't the chair at the time, but they were able to go ahead and set everything up. So that way everybody here that's on the reservation was able to go ahead and work towards this project. When I came on board I went ahead and helped more or less to make sure we get everything that we're supposed to.

K Road has been very generous in helping us out with everything we're trying to go ahead and provide. Amy with the BIA, again, very helpful to go ahead and help us with everything we need to do so that way we're at -- where we're at today is because of that. Everybody else here that's been -- most of you that's here has pretty much had some sort of involvement during this time to go ahead and help us with this project and,

again, I thank all of you for going ahead and giving help and support for everything we're trying to go ahead and provide for our people.

The solar project is something that has been -- it's a new technology that's been coming out here. During this time we've been talking with the Sierra Club about other issues that's been going on and one of them approached me the other day. We were talking about our own culture and what we're trying to do is we're trying to go ahead and combine what we have from our culture, what we have respect for our land for Mother Earth and Father Ski to go ahead and combine that with what we have today.

And so we combined that type of innovation with what we have to provide with our own culture it's something that's been working -- we've been working on it right now to make sure that not only are we trying to go ahead and utilize the sky, the ground, the earth, everything we're trying to go ahead and put together, but now we're trying to go and provide as a form of energy and at the same time we'll be able to go ahead and utilize that for our people and provide more economic development for our people as well.

These meetings that we've been having they've been very great for me to go ahead and talk more

about it and get more ideas. You know just today we were just talking about ideas about how we're going to go ahead and take care of our land. You know, we're not really trying to rely on government agencies to do that, we're trying to be more self-reliant and what we're trying to do is we're trying to go ahead and get more and more people involved with this not only just for the job development to go ahead and build these solar facilities out here on the reservation and provide them with jobs and careers for the future, but also, you know, one thing that was proposed was education and to go ahead and get our people aware of what we're trying to do.

The tortoise thing has been a big issue since it is an endangered species and we're trying to protect them. We don't want to go ahead and push them too far from our land, there was discussion about that before and our people don't want to go ahead and have them pushed off to another area because that's pretty much our responsibility to take care of our animals and take care of our land.

So we're trying to go ahead and keep them as close as possible from the site so that way we won't have any problems with any loss of tortoise or any type of disease or anything like that we don't want to

happen. We just want to keep it as close to our reservation at the same time keep that preserved so that way we'll be able to go ahead and protect them as well.

And during this discussion it was also mentioned saying, you know, we could also educate our people as well as take care of the land so that way they'll be able to be there and understand what the whole purpose is of having us preserve to keep our tortoises alive, but at the same time we'll be able to go ahead and educate and provide them to understand what we're all about also combining the new technology today and how we're trying to go and keep that culture and preserve it and keep that tradition alive and keep our Paiute people proud of what we're trying to do, what we're trying to do today. I've been working with this this whole year, it's been very fast and I never realized how important this is.

It just dawned on me again yesterday when I had so many agencies and environmental groups and people there to go ahead and talk about this. This is the very first solar site that's going to be on reservation land at this magnitude and across the whole country for Indian Nation and this is very important for us to go ahead and make sure that we get this accomplished, you know, with everybody else that we've been talking to,

we're not going to go ahead and just listen to it and do nothing about it, we want to go ahead and get everybody's input.

That's the whole point of tonight for everybody to come here so that way we can go ahead and use that and that way we can do everything we can to provide this type of development not just for our reservation, but other reservations so they can see what we're trying to do and at the same time follow us with the same footsteps so that way they can have that same connection, again, that native culture, that native pride that we have to go ahead and tie that in with what we're trying to do with our reservation and they can give -- give them that same respect and that same pride as well.

So, again, I just want to go ahead and welcome everybody here and, like she said, there's plenty of food and I hope you guys have a safe journey home and you guys have a good evening. Thank you.

MS. HEUSLEIN: Thank you, Chairman Anderson. I'd like to now introduce another speaker tonight. I would like to bring up here Kellie Youngbear. She is our superintendent at our Southern Paiute Agency and that's located in St. George, Utah. She also is a part of this process and one of our decision makers along the

way. So, Kellie, if you would come up.

MS. YOUNGBEAR: Good evening everyone. My name is Kellie Youngbear, I'm the superintendent at Southern Paiute Agency, our office is located in St. George, Utah. And our role here is our office has trust responsibility over all the resources on the land in our jurisdiction and Moapa is one of them. So this is a great honor and a great privilege and it is a really in-depth process of all the cooperating agencies.

I'd like to thank them and their efforts, Amy and Chad, and what I failed to do yesterday is to introduce the staff from the agency. I'd like to introduce Paul Schlafly, he's our natural resource specialist. He's also part of the environmental, he looks at the documents and provides comments to Amy.

Christina Varela, she's our realty assistant, she looks at all of the other -- if there's any right of ways, permits or leases, that's what our responsibility is at the agency so this is the support staff of the agency. So thank you.

MS. HEUSLEIN: Thank you, Kellie.

The next speaker tonight is one of our cooperating agencies, the Bureau of Land Management and also a very -- been working with us very closely on this particular project. I'd like to introduce you to

Mark Chandler here with the BLM.

MR. CHANDLER: Again welcome everybody. This is an exciting project for BLM. This is our first, you know, major project cooperating with -- working with the tribes and the BIA and it's been a fantastic ride all the way around.

I want to introduce some of the other BLM people here before I get going here. Back row, my boss Mark Spencer. Over here -- Mark Spencer, front field office manager. Over here Bob Ross, Las Vegas field office manager who will be signing the right of way grant. Michelle Leiber, realty specialist. Vanessa Hice, assistant field management for Division of Lands. And my counterpart back there sitting in the back Brenda Wilhight. And we also have Fish and Wildlife Service back there, Michael Burroughs who is also working on this project. John Edmonds who is our lead coordinator who will also be reviewing documents internally.

Our role in this project here is the transmission line. We're working cooperatively with BIA and the Tribe to grant the right of way for the transmission line, which is a 500kV transmission line that will be our cooperating role with this project and our hope is to grant the right of way concurrently at

the same time with them as they grant the right of way for solar facility.

So if you have a cell phone, please turn it on the vibe mode. And if you need to use the bathroom, it's out in the hallway just to the right.

MS. HEUSLEIN: Thank you, Mark.

I'm going to talk to you all about kind of our proposed action and also the NEPA process and what NEPA means and I think most of you I'm looking around might know what that word is, but the acronym we use is NEPA and we call it the National Environmental Policy Act. This is the law that the federal agencies must abide by and any federal actions that our agencies must approve or if we have a funding action.

So there's different types of NEPA documents. The one we're working on tonight is called an Environmental Impact Statement. And this meeting is here for you guys to learn about what this project is and why we're doing this type of environmental document.

We have with us the proposed action which is the development of a proposed solar project. The lead federal agency is the Bureau of Indian Affairs because this is on Indian land and we are the agency responsible and have jurisdictional responsibility for that. We have several cooperating agencies who are with us on

this project, as I indicated the Bureau of Land Management is one, the Environmental Projection Agency is another agency who has decided to come on board with us.

They're not here tonight so they send their apologies, but we also have the U.S. Army Corps of Engineers. They decided also to come and work with us on this document. As an interested agency, not an official cooperating agency. Also we work with the U.S. Fish and Wildlife Service and so they have a role under the Endangered Species Act that we work with them on that. And then, of course, the Moapa Band of Paiutes being a tribe they have authority and we have authority to bring them on board as a cooperating agency under the regulations for the National Environmental Policy Act.

We have what is being proposed right now is a 35-year up to a 50-year lease for the lease of tribal lands for this operation of up to 350 megawatt solar facility. This facility would be a footprint on the Tribe's lands at about 2,000 acres, approximately, and it will have some infrastructure that goes along with it, along with access road and transmission line, up to 500kV transmission line.

Also the project is going to have some other components to it including a water line and a 12kV line

that will go from the project area to the Moapa Travel Plaza and we'll have some more explanation on that here in a moment.

In the meantime I want to go -- okay. What does the EIS process look like and what does it involve. We've got about -- we're looking at it in three phases. We've had a notice of intent that was published back last February and basically kicking off the process to begin writing and working on this EIS, not only to do data collection, but also to write the document and do analysis on it.

We had public scoping actually in this same room here back in February and we did also on the reservation. We received comments on our process that we were looking at and trying to address to get to the point we are today, which is having a draft document for the public to review. So that's where we're at right now here being December. We've released that draft document, it came out right after Thanksgiving on November 25th and it is going to be available for public review for 45 days of time frame. That time frame ends on January 9th, 2012.

And then what we'll do from there is gather all the public comments and go ahead and analyze those comments and try to address those to the best of our

ability and then we prepare the final EIS and that final EIS will have another 30-day public review waiting period before we make a decision on a record of decision, which is kind of the agency's decision document.

After that document is done then the Bureau of Indian Affairs for our federal action, which is the approval of the leases or the lease or the -- and any right of ways that we may have to issue will be determined. And that's under our federal requirements under 25 -- what we call 25 CFR, Code of Federal Regulations, and that's for actions that we do with tribes. And then after that would be the opportunity to implement the action, then we can move forward with the project.

Okay. As I said, I talked about the schedule, the anticipated schedule, gave you that, we started out in February of this year, we are now here in the November/January time frame with the document. We did this pretty quickly, had a lot of people coming together, this is a quick process for us on an EIS, but we had a lot of resources at hand to help us get where we're at right now. So that was a positive thing. We got a lot of good surveys done and a lot of the data analyzed so I'm very pleased to say that we've done a

good job there.

Okay. How to participate in this process. Various ways: You can submit your comments orally tonight to us, concerns, or issues if you had a chance to look at the document or if there's other comments you can also submit them later on either through via e-mail to my address, I've got that address up here and I think it's on some handouts also. We've got some comment cards in the back so if you'd rather do it that way, you can just do it -- either leave it behind or mail it in.

And then we've got our court reporter over here, so if you don't feel comfortable with talking to any of us during a public forum, you can go ahead and ask to have your comments submitted orally through her and she'll type them up for you.

And then also we've got a project Website so that's up and running. That project Website is listed up here and it's on some of the handouts also. There's a little icon or a little link on that Website you can click into and it'll tell you to submit your comments that way. So trying to make it easy out there for the public to be able to do this. Also BLM has been kind enough to post it on their Website so there's a link to this particular Website that we have for the Draft EIS. The BIA has a link on our Website too.

We've also given out newspaper notices on the public meetings so hopefully that information came out to folks. So a number of ways that we have tried to get the word out about this project and this is all part of the environmental process and us getting to a point where we can make some decisions on documents and hopefully good decisions based on the information that we've gathered and analyzed. So I hope that answers some of the questions of why we're here tonight doing this public meeting process.

In the meantime I'd like to now introduce Chad Martin. Chad is with ARCADIS, he has been the contact we've been using and our consultant to prepare the document. So Chad has been very helpful in doing a lot of the legwork for us. So we've used their agency, their company to help us get to where we're at today. He's going to tell you about some of the project details and we'll be able to learn more about what we're doing here.

So, Chad, I'll turn it over to you.

MR. MARTIN: I see a few new faces tonight, welcome, I'm glad you all made it. I heard a comment earlier today that this is one of the best EISs that they've seen in a while and I couldn't agree more.

So we're going to go through a quick outline

here. We're going to go over the need, which we've kind of touched on a little bit, location, the size and type of facility we want to build, some of the alternatives that we looked at. The associated features that we touched on briefly. The resources that were studied through the NEPA process and we already kind of went over the schedule.

So the project need. Primarily the project need is to provide economic development for the Tribe. And there's going to be some other benefits that go along with that. We're going to provide jobs for local tribal members, there will be a boost in the stimulus type money to the Travel Plaza, there's a restaurant there, gas, supplies, there's also local restaurants in the area that'll see some generated business for up to five years during the construction period.

Secondly, assist utilities in meeting their renewable energy goals, we're hoping to help them out with that. Provide electric infrastructure to the Travel Plaza. Currently the Travel Plaza, which is at exit 75, about 25 miles north of here on I-15, it runs off of diesel generators. Part of this project is to provide a 12kV line that's going to connect the solar facility to the Travel Plaza, which will allow them to connect to electric grid.

During the day they'll obviously be pulling off of the solar plant using good, clean energy. At night they'll be able to connect to the grid and in a nutshell get off of diesel generators, which is the goal so that it expands some of their operations over there.

Location, so it's about 25 miles straight north of here. It's wholly within the Moapa Indian Reservation except for a small piece of the transmission line, which cuts across .5 miles of BLM land.

Access to the site is going to be exit 64, that is the Highway 93 exit. Immediately after exiting you go west and you use Las Vegas Boulevard, which is a county-maintained road for about seven miles, turns into a county road up to the Crystal substation. This is currently an unimproved utility road that runs through the BLM utility corridor, there's a 4,000 foot wide BLM utility corridor, we plan to improve that road mainly by laying aggregate and/or widening in some locations where topography doesn't allow for large truck access.

This is a little bit better map of land ownership. You see the Moapa L-shaped reservation here and then this is the dividing line between BLM and the reservation. We'll see a better picture here, but this is the 500kV transmission line, the access road, they pretty much parallel each other, and all of this is

within a BLM utility corridor that spans right through that area. Travel Plaza is right here, that's exit 75.

This is -- we put this together a while back, this is basically taking kind of a 3D view using Google map, just put some preliminary drawings on the ground and this gives you an idea of what it will look like out there from a bird's-eye view. The Travel Plaza sits right here, this is approximately less than a half of a mile, this is the UP Railroad and this is Interstate 15.

So the solar facility itself will be a 2,000 acre footprint and the transmission line, access road, 12kV line, and there will also be a water pipeline that will tap an existing well that's in use on the reservation today. We're looking at approximately 153 acres of impact for those right of ways. 350 megawatts is the complete build out, however, we may build this in phases, three phase schedule, somewhere around 100 to 150 megawatts each phase.

Using PV technology, photovoltaic, this is an example of a common PV, they range in size, anywhere from five feet to eight to nine feet in the back. This project is going to incorporate probably two kinds, a single tracker system, which actually attracts the sun throughout the day and then something more like a fixed

tilt where topography doesn't allow us to get the tracker type system in there.

So why PV? Well, number one, it's proven technology. We've been using it a long time and it still works and it seems to be getting better, it's more efficient, technology is improving. There's a decreased need for water, water usage after construction is simply for panel cleaning two to three times a year, no greenhouse gas emissions, noise is minimal even on the trackers and some of the electrical equipment being a half a mile from the closest receptor. I don't think -- you won't hear a thing from the calculations that we did.

Visual impact, these are low to the ground, seven foot -- seven to eight foot max in the backside as you can see in this 3D image people standing here. So essentially you can touch the top of these panels. Being out I'd say it's almost three-quarters of a mile from the closest point of I-15 when you're driving by. So the viewshedding is not blocked and it largely looks like a flat, gray surface from a distance.

So this is a picture, what you can't see in here, which is in here, is the 2,000 acre footprint solar panels. If you were to zoom in you can kind of see them right here in the background. We used CAD 3D

imagery and we laid in what we think is going to be the facility design. This is taken from the side of the road on I-15. The railroad levy runs right here and then about 200 yards in the background is about 1.5 million solar modules.

So some of the alternatives that we looked at during the NEPA process, the no action, which is basically what happens if we don't build it, what are the impacts. We looked at an alternative transmission line corridor, I'll show you a picture of that in a second, and with that we incorporated a smaller footprint, essentially about a 250 megawatt footprint. We looked at an optional site within the reservation and we also touched on different technologies, which I'll go over in more detail. So this was Alternative 1. This was an alternative that we took through the complete NEPA process, we analyzed Alternative 1 against all of the resources studied.

Reduced solar footprint that's about 1,600 acres. The reasoning for the weird shape is there's some drainages that are out there, so in order to utilize as much flat land as possible we get this little jagged shape. We're keeping the access road the same, it's an existing road, it's there, no reason not to use it. The water pipeline and the substation would move to

the south, it would decrease the distance from the 12kV line to the travel station.

It decreases the length of the 500kV transmission line; however, it does cut through the middle of some open desert and during the scoping process we heard a lot of comments on that from groups, environmental groups that that could cause more impact. It opens it up later to maybe being able to utilize the area in there, it takes away from the esthetic view by throwing something out in the middle of the desert.

Optional site, it was just on the other side. The Tribe has looked at this site in the past for other projects, we looked at it as well, probably had a lot of the same impacts except it had greater potential for erosion, it's on the hillside with mountains in the background so water drainage, sedimentation was an issue. It increases our distance for a 12kV line; however, we're still utilizing the access road and the BLM corridor for our other access, transmission line and access road.

Alternative technology, several of them out there. Some of the big ones are concentrated solar, basically a group of mirrors shining light up on a thermal tower. Trough, which is focusing light on a gas tube. All of these utilize water in some respect. What

we've found is that PV uses less water.

So the associated features we've hit on most of them. We have the transmission line and then this is the proposed project, transmission line, the access road, this is the water pipeline, it's approximately a mile in length and it connects directly to an existing well. This well is also used for a water pipeline that runs to the Travel Plaza that's in use today and the 12kV line parallels that water line, which is also an existing access road. So we're minimizing impacts by utilizing that already impacted corridor.

We'll also have up in the northwest operations and maintenance area, we'll have an operations and maintenance building. The facility substation, electrical substation will be placed there, there will be a small evaporation pond. Its primary use is to clean water through reverse osmosis system. The water coming out of the well is high in sulfide and can leave films on the PV panels. So in order to get good, clean water we'll take it through RO, discharge will come from that going into the evaporation pond, and that will be cleaned out on a regular basis and most likely shipped off to an improved landfill.

Parameter fence, we'll have a security parameter fence, six to eight feet tall, three wires of

barb wire on the top, and we'll also have desert tortoise fencing on the bottom 24 inches and buried into the ground.

This is conceptual engineering on the electric transmission line. You can see that there's already five electric transmission lines in the corridor, they range from 230kV to 500kV. We're approximately 24 structures, the structures will either be the lattice towers that you see out there today. The 500 -- there's two 500kV lines that will be paralleling, both of those currently have lattice structure or maybe a three-pole metal galvanized pole structure.

This was the first shot at engineering plans for the layout. What you'll notice here is the fixed tracker you're going to see with lines in these areas around these drainages and these white areas are the drainages, there's about six major drainages that come through here. Some of them are pretty steep-sided cliffs so we, obviously, are not going to go solar down in those areas, we're going to utilize them as they're being used today for storm water runoff and these will be the fixed tilt down in the areas of more topography where we can't use the fixed trackers.

This is a blowup of the O&M area, which will be placed right up in here and you can see the

evaporation pond and some of the infrastructure there.

So the resources studied in the NEPA process, they're all the same for all EISs, a quick list is air quality and claimant soil, surface and ground water, noise, biological resources, cultural resources, social economic conditions, environmental justice analysis, resource use patterns, energy and minerals, transportation, special management areas, which are your parks and your recreation areas, visual resources, and public health and safety.

What we found through the NEPA process was there were some beneficial affects of the project, primarily long-term air quality impact using solar green energy might reduce use of other fossil fuel energy power plants in the future and some economics, socioeconomics, provides jobs, five years of increased revenues at the local stores.

Three things that we found that had other impacts and some of them somewhat significant. Air quality is a short-term impact during the construction time. We're obviously going to have fugitive dust from trucks running up and down the roads during grading processes and trucks coming in and out. We're approximating 20 to 30 large vehicles going in and out every day, emissions from that. That's a three to five

year process in a phased approach. No real long-term air quality, as I mentioned it's beneficial in the end.

Soil, impacts to the soil, obviously, during the construction process and the biological, which was one of the more focused resource areas with the desert tortoise and some of the threatened endangered species in the area.

So biological resources, desert tortoise we originally did a full 100 percent survey of the 2,000 acre site as well as associated utility lines and access road and we found 26 adults within the 2,000 acre footprint. We are in the process of putting together a translocation plan, we're working with Fish and Wildlife to complete this, we have a draft. During that process we looked at a relocation site on the reservation that's 6,000 acres, it's about four and a half miles northeast of the solar site.

We also looked at two secondary sites adjacent to the footprint to the north and to the south and each one of those are 25 acres in size -- I'm sorry, 2,500 acres in size. One of those could be used if we need to utilize it, if we find more tortoises than we expect and one of them will be used for our control area.

Biological opinion from Fish and Wildlife is

expected sometime around February 2012. And we're also -- we have a draft Bird and Bat Conservation Strategy Plan, which is also known as an Avian and Bat Protection Plan, we're in the process of putting that together.

This was the original results from the 2010 and 2011. From the scoping meeting we ended up moving the original alignment of the transmission line up into the corridor, which changed the water line and the 12kV line somewhat. So we came back out in 2011 and we picked up those areas. As you can see the green is burrows and the red is actually desert tortoise sightings and most of these guys as the literature shows really like these upland, fluvial type habitats along those drainages.

Desert tortoise translocation plan. In a nutshell we need to put up an exclusionary fence around the entire thing. To do that we'll have biological monitors in place and they will be working with the fence crews in order not to impact any desert tortoise. We'll also be out there building quarantine pens that will be used during the relocation process that could take place in the fall of 2012.

We'll probably have a good bit of biologists out there, we'll be completing sweeps probably in the

phase approach. We'll be walking five meter transects side by side and checking every burrow that we find looking for tortoises, excavating, and then temporarily placing them in the pens.

Upon being in pens they'll have health inspections, we'll take blood samples and send them off to labs to make sure that they don't have any issues, and they'll be placed with a transmitter and eventually relocated over to the 6,000 acre site. The relocated desert tortoises, the resident desert tortoises at those locations, and the tortoises at the control area will all be monitored for a period of five years minimum.

This is a snapshot of these areas that we looked at, the 6,000 acres and the two 2,500 acres north and south of the facility. Again, here is I-15, to give you some idea, and then this is the Moapa Reservation outline. So a pretty good chunk of land.

Cultural resources, we sent a team out there, we did a full cultural study of the 2,000 acre facility and all associated access roads and transmission lines. BLM helped us a great deal on this and we recently received a concurrence letter from the State Historic Preservation Office that concurred that there will be no impacts to cultural resources.

Air quality, as I mentioned, there will be

some short-term during construction vehicle use and fugitive dust. A lot of this is going to be minimized through dust control using water trucks.

Water resources, we're being conservative on 7,200 acre feet a year. The Tribe has been allocated 2,500 acre feet a year, we're going to use 72 acre feet of that 2,500. During the construction period is when a lot of this water usage will take place mainly for dust control. We're expecting anywhere from 20 to a maximum of 40 acre feet a year during operations.

Frequent rain events out here, not that frequent, but when they come there's some pretty good gully washes out there. So during construction we will probably have some short-term sedimentation into these ephemeral washes, but we will have BMPs in place, we'll have a storm water plan in place, we'll use gabions and structures to minimize that flow, which will reduce sedimentation down the stream.

The soil kind of goes hand and hand with water. A couple of mitigation measures, stop work during really windy days with 30 and 40 mile an hour gusts that will decrease loss of surface soil. The Storm Water Pollution Plan will help with a lot of sedimentation problems.

One of the things we want to try to do is

we're going to implement a restoration plan after the construction period and infrastructures in place, come back where we have scraped top soil off, we'll keep it on the side so we can put it back as a top layer, keep that seed banked, and try to get some of that native vegetation to grow back in the areas along access roads and things like that. It will need to be maintained to a certain height so that it doesn't affect the PV panels and the facility itself.

So as part of our mitigation we talked a lot about these plans, these are the plans that will be in the final DIS, you'll be able to view them there. The Desert Tortoise Translocation Plan, which will actually be an appendix, the biological opinion that the U.S. Fish and Wildlife we'll be putting together.

The Bird and Bat Conversation Strategy, the Weed Management Plan, Site Restoration Plan, Decommissioning Plan, Storm Water Pollution Prevention Plan, and Spill Prevention Control and Countermeasure Plan. That last one basically looks at construction and operational hazards, spills, fluids that come out of vehicles and whatnot, how we're going to deal with them, how we're going to clean them up and take care of it.

Other documents that you can find in the draft EIS that is also found online, there's a bigger

picture of the policy and rules and regulations. Being this is on BLM land and Reservation land, certain rules apply to certain parts of the project. There's some cultural resource documentation and letters from SHPO, there's Visual Contrast Rating Sheets, which basically goes through the visual assessment that we did with BLM recently.

That picture right back there with the pink on it, that's -- basically we took 10 meter digital elevation models and we laid them out on GIS and then since we know the elevation of the solar facility we could tell the model where can we see the solar facility from an average six foot person in a 10 mile radius. So the areas in pink are where you could actually see the solar facility and you'll notice most of it is high elevation in the mountains, two to three miles away from the site.

Air quality tables for construction operation and decommissioning can be found in the appendices. The biological assessment, which takes a better look at the desert tortoise and some of the other species that we looked at.

U.S. Corps of Engineers Jurisdictional Determination Report that basically looked at the waters, the six ephemeral drainages that came in, we

determined with the Corps that these were not waters in the United States, so different rules apply.

Public Scoping Report that we had last year is in there. Public Comment and Agency Correspondence, those are letters that we received and incorporated into the EIS process. And the Environmental Hazardous Radius Report, that's basically a report that looks for historical hazardous materials, spills, and whatnot that could be in the area.

The schedule, again, we're currently here at the bold type and we're looking at a final EIS for public review April and May and a BIA decision as well as a BLM right away grant somewhere around May 2012. I'd like to start construction probably late summer, early fall of next year, start with the fencing and start moving forward with the desert tortoise relocation process fall of 2012.

So that completes the presentation at this time. We will entertain any comments or concerns that you may have and if you don't mind, if you have a comment, please stand up and state your name and if you're with an organization if you could state that so that we could have it for the public record.

Thank you.

MS. HEUSLEIN: Thank you, Chad. I hope that

presentation gave you some background as to what this project is about and gave you a little more information. As Chad mentioned, we have the draft EIS available in three different forms. We have hard copies, if you'd like a hard copy, you can contact us and we'll get one mailed out to you, it's in two volumes. So the first volume is a basic aspect of the EIS itself and then the Volume 2 has all these appendices that Chad mentioned here.

We also have some CDs left on the table back there if you'd rather have that or it's actually located on the Website that is listed up here. So there is three ways you can take a look at the document. It is a pretty good size document. So you're going to have to, you know, if you like to read, that's a big document to read, but it's got a lot of good information in it and I hope we did a pretty good job of pulling together and analyzing what the potential impacts would be. We also have some posters in the back you can take a look at.

We are going to be here for the next hour so if there is any specific questions you have of us, kind of catch us on the side here, but in the meantime I'd like to at least open this up if you have any public comments, oral comments, verbal comments you might have regarding the project itself at this time.

So with that in mind I will open it up if anybody has a comment to -- if they want to state it on the EIS itself.

MR. HIETT: I have a question. Who is your power purchase agreement with or do you have one?

MS. HEUSLEIN: Where are we with this, Chad?

MR. MARTIN: I don't have that information.

MS. HEUSLEIN: I think it's being worked on right now.

MR. HIETT: So you do not have a current power purchasing agreement?

MS. HEUSLEIN: We do not have one in place. Chad, do you want to answer that?

MR. MARTIN: We're working on that now, but you're right, there's not one in place.

MS. HEUSLEIN: Yes?

MR. MROWKA: Rob Mrowka spelled M-r-o-w-k-a, and I represent the Center for Biological Diversity, a nonprofit conservation organization and first I want to commend and congratulate Chairman Anderson and the Moapa Band of Paiute for their vision and their leadership in this project in becoming an example for other tribal nations across the country to get involved, it makes me proud as a Nevadan to have that happening.

We also -- I would like to say as Chad

mentioned somebody said the EIS was good, I believe the EIS was very well done and the draft and Chad and the BIA to be commended for that as well.

A concern that I have is the desert tortoise issue of translocation and one of the concerns is the need for doing disease and holding of tortoises for such a short distance that they're being relocated and I understand that that's part of the draft protocol that Fish and Wildlife Service has, but I just want to go on record and voice that concern. There's been I think a history of perhaps putting -- euthanizing tortoises that don't need to be euthanized because they exhibit antibody reactions and my organization has gone on record against that.

The other concern I have on translocation is that the area that the tortoises are to be moved to needs to be of sufficient quality habitant that gives those tortoises a good chance of being a viable population and also that any translocation area needs to have some assurances, very strong assurances that it's going to be protected and used for desert tortoise habitat belonging to the future.

Another concern regards to rare plants and the need for looking beyond federally listed plants and trying to mitigate impacts on plants through design and

through very micro detail shifting of infrastructure, whether it be within the solar area itself or within the transmission corridor right of way.

With that said, we're very supportive of this project and look forward to having it go ahead.

MS. HEUSLEIN: Thank you. Any other comments?

The gentlemen that asked a question before, can you state your name for the record, I'm sorry.

MR. HIETT: John Hiett, H-i-e-t-t.

MS. HEUSLEIN: Thank you, John.

MR. SPOTLESON: Vinny Spotleson, V-i-n-n-y, S-p-o-t-l-e-s-o-n. I spoke last night so I just wanted to address this audience here today that the Sierra Club is also really excited that Moapa Band of Paiutes are pursuing solar development to create jobs in the areas of Moapa and we work with the Tribe very closely to try to clean up the transition off of the Reid Gardner coal plant, which is literally right on top of the reservation community there.

And so I think that this project is very important to show that there is a viable transition that solar power is here and that we can create a lot of jobs and really help Nevada's economy with this project. So we look forward to reviewing the final Environmental

Impact Study and the Desert Tortoise Translocation Plan specifically and hope to someday support this project.

Thank you.

MS. HEUSLEIN: Any other comments?

Well, you have the opportunity to, you know, chat with us here after -- offline here, kind of an open house here. And, again, if you'd like to present any oral comments, I would ask you to go to the court reporter so she can write that down or put it on those cards that are in the back of the room that we have or go online to that Website and then you can address those comments, or if you want to e-mail them to me, that's fine too. We have a variety of different ways people can express any comments they may have on this process.

And, again, the comment period closes on January 9th at the close of business. So I think there's still plenty of opportunity to take a look at that document even though it's a large document, it's a good Christmas reading.

So thank you very much, I appreciate everyone coming out tonight and please enjoy, we have some refreshments in the back of the room and we welcome you to stay with us here for the next 40 minutes or so.

Thank you.

* * * * *

REPORTER'S DECLARATION

STATE OF NEVADA)
) ss.
COUNTY OF CLARK)

I, Gina J. Mendez, CCR No. 787, a certified shorthand reporter, do hereby certify that I took down in shorthand (Stenotype) the proceedings had in the before-entitled matter at the time and place indicated; and that thereafter said shorthand notes were transcribed into typewriting at and under my direction and supervision and the foregoing transcript constitutes a full, true, and accurate record of the proceedings

IN WITNESS WHEREOF, I have hereunto set my hand in my office in the County of Clark, State of Nevada this 3rd day of January, 2012.

/S/Gina J. Mendez

Gina J. Mendez, CCR No. 787

APPENDIX E:

PUBLIC MEETING DISPLAYS AND PLACARDS

This page intended to be blank.

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
SOUTHERN PAIUTE AGENCY
P.O. Box 720
St. George, Utah 84771

Date: December 14 & 15, 2011

Location: Moapa River Indian Reservation / Town Hall
Offices of the Bureau of Land Management

Welcome to

The Public Meeting for NEPA Environmental Impact Statement for the Proposed K Road/Moapa Band of Paiute Indians Photovoltaic Solar Facility, Clark County, NV.

Agenda of Today's Meeting:

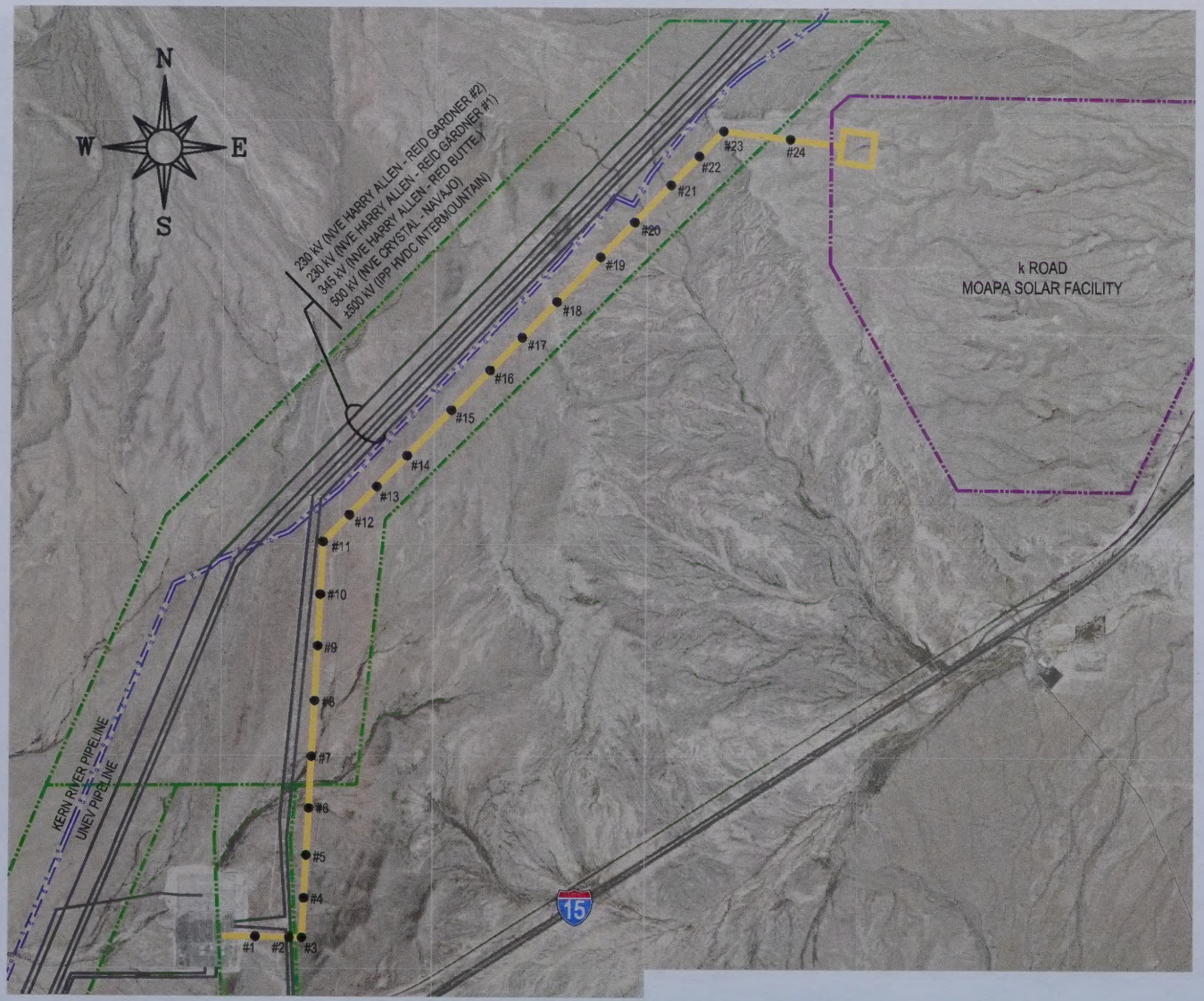
- **Opening Remarks**
- **Welcome by Chairman Anderson** – Moapa Band of Paiute Indians
- **Opening Remarks by Kellie Youngbear** – Southern Paiute Agency
- Opening Remarks by the Bureau of Land Management – Mark Chandler
- **The NEPA Process** – Where are We?–Amy Heuslein (BIA)
- **Presentation of Proposed Project** – Chad Martin (ARCADIS)
- **Public Comment Period** – Amy Heuslein / Chad Martin (Facilitators)
- **Written Comments Protocol**
- **Open Floor Exhibits and Discussion**

More Information at our website: http://projects2.pirnie.com/MoapaSolar/

Map Document:Austin/6923001/GIS/MXD/BLM Lands Figure 1

MALCOLM PIRNIE	K Road Power San Diego, California K Road Moapa Solar Facility	Moapa River Indian Reservation Project Vicinity Map	MALCOLM PIRNIE, INC. November 2011 FIGURE 1-1

Image © 2010 DigitalGlobe
Image USDA Farm Service Agency
Image U.S. Geological Survey
©2010 Google



PROJECT VICINITY MAP

LEGEND:

- TRANSMISSION LINE ROUTE
- EXISTING TRANSMISSION LINES
- EXISTING GAS PIPELINE
- MOAPA SOLAR FACILITY
- UTILITY CORRIDOR

NOTE:

PIPELINE LOCATION DATA IS OBTAINED FROM GIS DATABASE AND SHOWS GENERAL CORRIDOR LOCATION (NOT SURVEY ACCURATE).

September 2011

FIGURE 2-6

FILE LOCATION: L:\KROAD\KRS-002 MOAPA SOLAR\11 DRAWINGS\05-ROUTE MAP\CONCEPTUAL DESIGN MAP\KRS-05-001.DWG LAST SAVED BY: aserede 10/12/2011 12:39 PM PLOTTED BY: Andrew Serede 10/12/2011 12:43 PM Tab:Model

ELECTRICAL CONSULTANTS, INC
SALT LAKE CITY, UTAH

NO	REVISION	DATE	BY	APR
A	PRELIMINARY CONCEPTUAL DESIGN	09/13/11	AVS	ECI

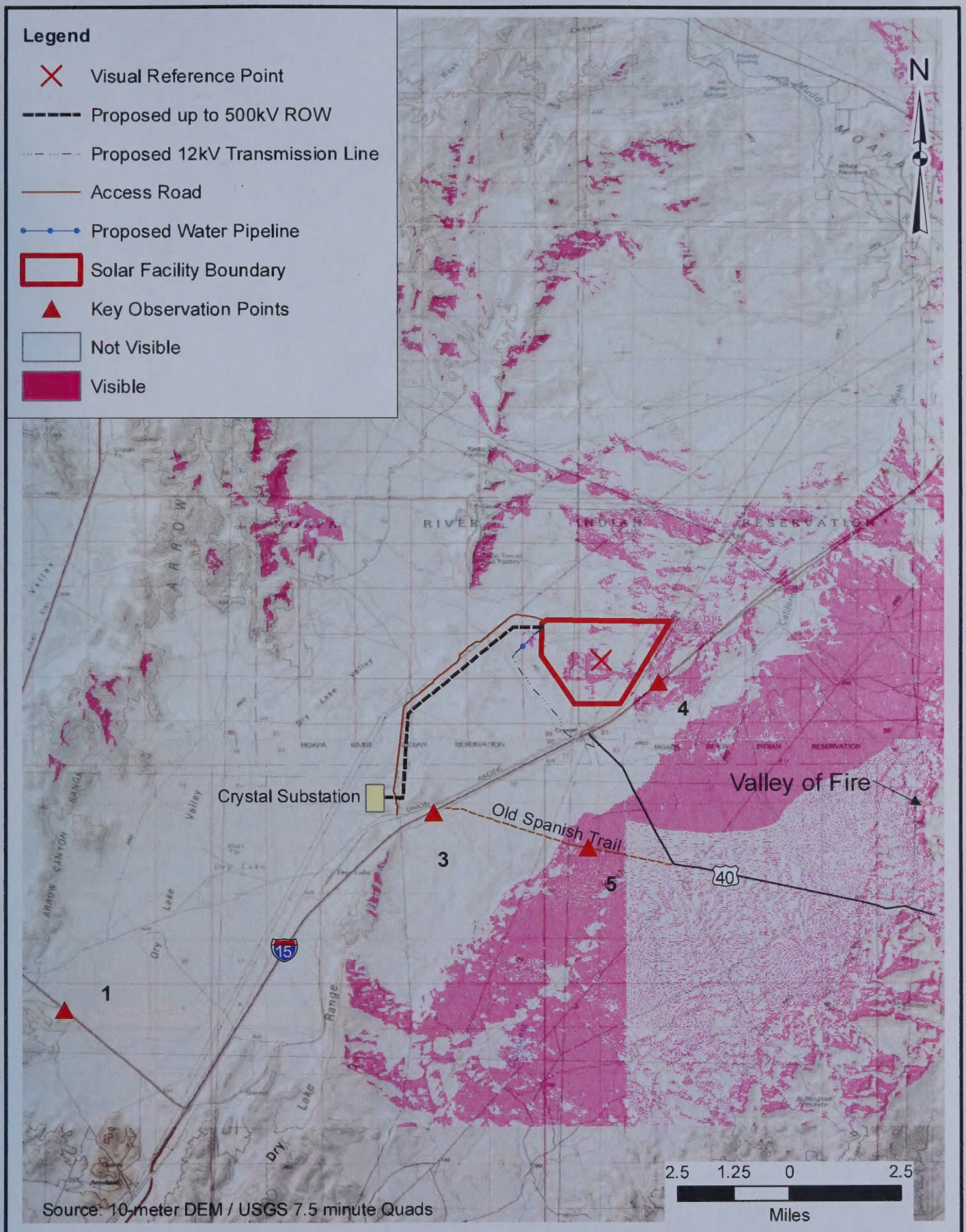
k Road Power

ENGINEERING RECORD		DATE
DRAWN	AVS	05/04/11
DESIGNED	LWE	05/04/11
CHECKED		05/05/11
APPROVED		
DWG SCALE:	PLT SCALE:	

MOAPA SOLAR PROJECT

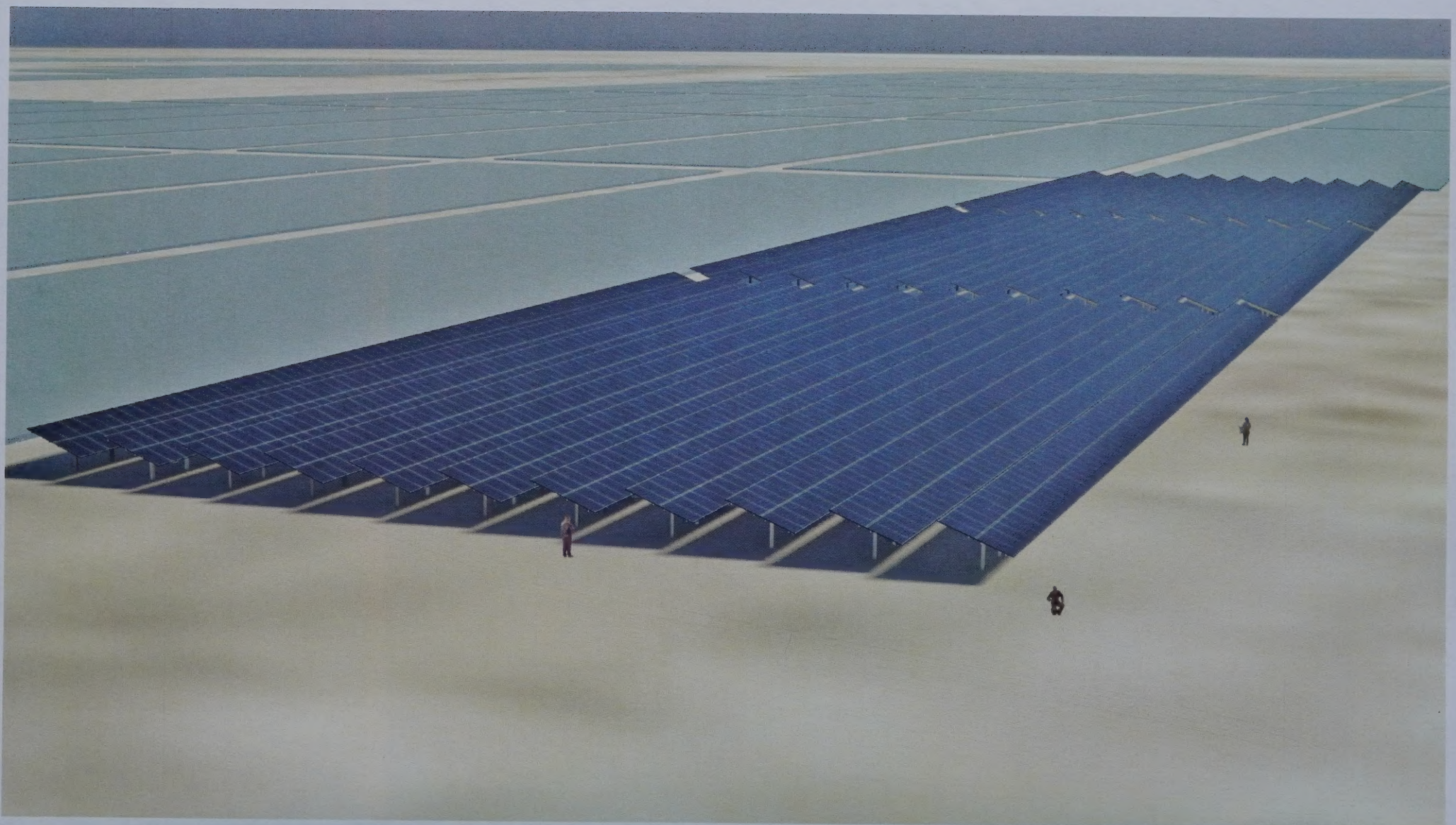
ROUTE MAP DRAWING

DWG. NAME: KRS-05-001 REVISION NO : A

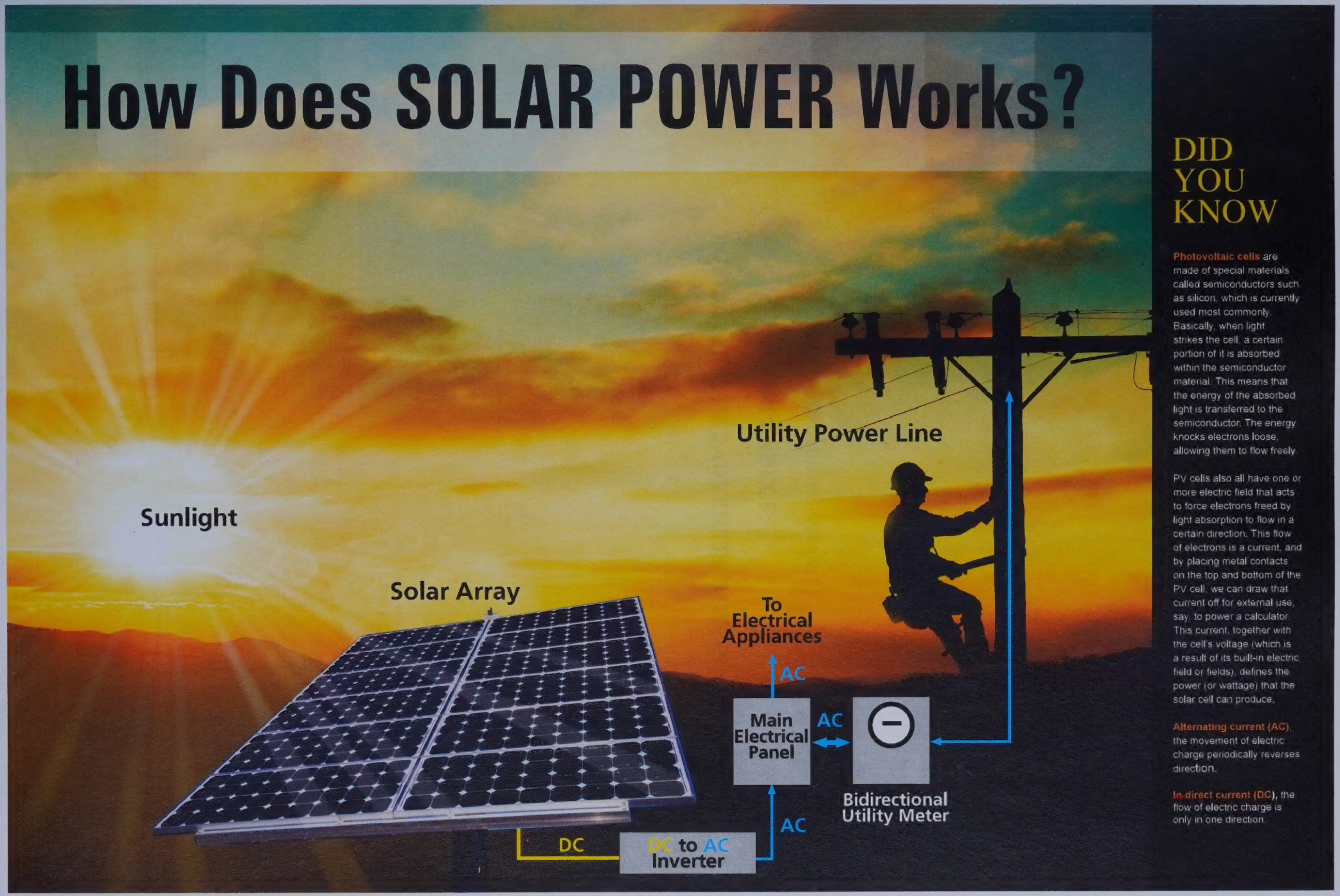


MALCOLM PIRNIE	KRoad Power San Diego, California KRoad Moapa Solar Facility	Moapa Reservation Moapa Town, Nevada Viewshed Analysis	MALCOLM PIRNIE, INC. November 2011 FIGURE 3-14

Map Document:Austin\6923001\GIS\MXD\BA Figure 2-2



How Does SOLAR POWER Works?



DID YOU KNOW

Photovoltaic cells are made of special materials called semiconductors such as silicon, which is currently used most commonly. Basically, when light strikes the cell, a certain portion of it is absorbed within the semiconductor material. This means that the energy of the absorbed light is transferred to the semiconductor. The energy knocks electrons loose, allowing them to flow freely.

PV cells also all have one or more electric field that acts to force electrons freed by light absorption to flow in a certain direction. This flow of electrons is a current, and by placing metal contacts on the top and bottom of the PV cell, we can draw that current off for external use, say, to power a calculator. This current, together with the cell's voltage (which is a result of its built-in electric field or fields), defines the power (or wattage) that the solar cell can produce.

Alternating current (AC), the movement of electric charge periodically reverses direction.

In-direct current (DC), the flow of electric charge is only in one direction.

This page intended to be blank.

APPENDIX F:

PUBLIC MEETING ADVERTISEMENTS

This page intended to be blank.

Notice of Availability and Notice of Public Meetings on the Draft Environmental Impact Statement for the Future Moapa Band of Paiute Indians Solar Generation Facility

U.S. Bureau of Indian Affairs (BIA) and the Moapa Band of Paiute Indians announced the availability of the Draft Environmental Impact Statement (EIS) on the future Moapa Band of Paiute Indians Solar Generation Facility. The BIA is now in the 45 day public comment/review period. As part of the public comment/review period, the BIA invites you to attend one of two public meeting to discuss and comment on the proposed Moapa Band of Paiute Indians Solar Generation Facility. Written and verbal comments will be accepted during the meetings. The two meetings are open to the public and all interested parties are encouraged to attend.

Please plan to attend one of the following meetings:

Wednesday, December 14, 2011

Moapa River Indian Reservation Tribal Hall,
One Lincoln Street, Moapa, NV 89025-0340

Thursday, December 15, 2011

U.S. Land Management Bureau (BLM) Conference Room,
4701 N. Torrey Pines Dr. Las Vegas, NV 89130

All meetings will be held between 6:00 pm and 8:00 pm with a brief presentation at 6:15 pm.
Light refreshments will be served.

The Draft EIS is available for review and you may submit comments on the project web site http://projects2.pirnie.com/MoapaSolar/

The proposed Moapa Band of Paiute Indians Solar Generation Facility will be built in three phases to meet the needs of off takers or utilities, up to a total of 350 MW. The proposed project will be located on approximately 2,000 acres within the Moapa River Indian Reservation in Clark County, Nevada, approximately one mile west of Interstate 15 and approximately 30 miles northeast of Las Vegas. The project would also include the construction of a power transmission line across BLM property to reach the Crystal Substation operated by NV Energy.

For more information on how to participate, email Ms. Amy Heuslein, Regional Environmental Protection Officer, at amy.heuslein@bia.gov (602.379.6750) or Mr. Paul Schlafly, Natural Resource Officer, at *paul.schlafly@bia.gov (435.674.9720).*

This page intended to be blank.

APPENDIX G:

PUBLIC MEETING NOTICE MAILER AND DRAFT EIS NOTICE OF AVAILABILITY

This page intended to be blank.

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 North Central Avenue
Phoenix, Arizona 85004-3008

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
Environmental Quality Services

Notice of Availability and Notice of Public Meetings on the Draft Environmental Impact Statement for the Proposed K Road Moapa Solar Generation Facility

U.S. Bureau of Indian Affairs (BIA) and the Moapa Band of Paiute Indians announced the availability of the Draft Environmental Impact Statement (DEIS) on the proposed K Road Moapa Solar Generation Facility. The 45-day public comment/review period occurs between November 25, 2011, to January 9, 2012. As part of the public comment/review period, the BIA invites you to attend one of two public meetings to discuss and comment on the proposed K Road Moapa Solar Generation Facility. Written and verbal comments will be accepted during the meetings. The two meetings are open to the public and all interested parties are encouraged to attend.

Please plan to attend one of the following meetings:

Wednesday, December 14, 2011
Moapa River Indian Reservation Tribal Hall,
One Lincoln Street, Moapa, NV 89025-0340

Thursday, December 15, 2011
U.S. Bureau of Land Management (BLM) Conference Room,
4701 N. Torrey Pines Drive Las Vegas, NV 89130

All meetings will be held between 5:30 pm and 7:30 pm with a brief presentation at 6:15 pm. Light refreshments will be served.

The DEIS is available for review on the project web site http://projects2.pirnie.com/MoapaSolar/. You also may submit comments on the project web site.

The purpose of the Proposed Project is to construct a 350 megawatt (MW) solar generation facility and associated infrastructure on the Moapa River Indian Reservation, including the development of a water line and 12 kV transmission line to supply power to the Moapa Travel Plaza. The Proposed Project also includes obtaining a Right-of-Way grant of easement on BLM lands for an up to 500 kV transmission line and access road. The proposed project will be located on approximately 2,000 acres within the Moapa River Indian Reservation in Clark County, Nevada, approximately one mile west of Interstate 15 and approximately 30 miles northeast of Las Vegas.

For more information on the Proposed Project, please email Ms. Amy Heuslein, BIA Regional Environmental Protection Officer, at amy.heuslein@bia.gov (602-379-6750) or Mr. Paul Schlafly, *BIA Natural Resource Officer, at paul.schlafly@bia.gov (435-674-9720).*

This page intended to be blank.

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE
2600 North Central Avenue
Phoenix, Arizona 85004-3008

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
Environmental Quality Services

NOV 28 2011

November 28, 2011

Re: Notice of Availability and Notice of Public Meetings on the Draft Environmental Impact Statement for the Proposed K Road Moapa Solar Generation Facility.

Dear Interested Party:

The Bureau of Indian Affairs (BIA), as the lead federal agency, and the Bureau of Land Management (BLM), the Environmental Protection Agency (EPA), the United States Army Corps of Engineers, and the Moapa Band of Paiute Indians (Tribe) as Cooperating Agencies, prepared a Draft Environmental Impact Statement (DEIS) for the proposed K Road Moapa Solar Generation Facility on the Moapa River Indian Reservation (Reservation) in Clark County, Nevada. This letter announces the DEIS is now available for public review and comment and that public meetings will be held to solicit comments on the draft document.

The proposed Federal action is the BIA approval of a solar energy ground lease and agreements entered into by the Tribe with K Road Moapa Solar LLC (K Road), and approval of rights-of-way (ROW) and easements for K Road to construct, operate, and maintain an up to 350 MW solar electric generating facility on the Reservation. The proposed Federal action also includes the BLM approval of a new transmission line ROW within the existing BLM utility corridor on the Reservation. The transmission line will have a capacity of up to 500 kV and include a service access road. The proposed project will be located on approximately 2,000 acres within the Moapa River Indian Reservation in Clark County, Nevada, approximately one mile west of Interstate 15 and approximately 30 miles northeast of Las Vegas, Nevada.

The DEIS includes an analysis of the Proposed Project including the 2,000 acre solar facility footprint, a 5.5 miles long 500kV transmission line corridor, a one mile long water line, and a threemiles long 12kV transmission line. In addition, the DEIS includes an analysis of another alternative for a reduced solar facility footprint (1,400 acres with an alternate 500kV transmission line corridor), and also a "No Action" alternative.

The DEIS is available for review and comments on the project website: http://projects2.pirnie.com/MoapaSolar/. The DEIS is also available for review at the following location(s) during normal business hours:

Bureau of Indian Affairs
Western Regional Office
Branch of Environmental Quality Services
2600 North Central Avenue
12th Floor, Suite 210
Phoenix, AZ 85004

Bureau of Indian Affairs
Southern Paiute Agency
180 North 200 East
Suite 111
St. George, UT 84770

Bureau of Land Management
Southern Nevada District Office
4701 North Torrey Pines Drive
Las Vegas, NV 89130

Compact disks containing the DEIS are available from the BIA Western Regional Office Branch of Environmental Quality Services, the BIA Southern Paiute Agency and BLM Southern Nevada District Office addresses listed above. Due to the size of the document, printed copies are limited so we request that you utilize the methods above to review the DEIS before requesting a printed hard copy.

The BIA is requesting written comments on the DEIS. To ensure all comments will be considered, the comments must be received within 45 days following the date the EPA publishes the Notice of Availability in the Federal Register which was published on November 25, 2011. The comment period will end on January 9, 2012. Public meetings will be held at the Moapa River Indian Reservation and BLM office in Las Vegas, Nevada, on December 14-15, 2011, respectively. Notices will also be published on the website and in local newspapers announcing the times and locations of the meetings.

You may submit comments related to the K Road Moapa Solar Generation Facility Project by any of the following methods:

1. Project Website: http://projects2.pirnie.com/MoapaSolar/
2. E-mail: amy.heuslein@bia.gov
3. Mail: Ms. Amy Heuslein
   Regional Environmental Protection Officer
   BIA Western Regional Office, Branch of Environmental Quality Services
   2600 North Central Avenue, 4th Floor Mail Room
   Phoenix, Arizona 85004-3008
4. Fax: (602) 379-3833, Attention: K Road Moapa Solar Generation Facility Project

Written comments may also be hand-delivered to the BIA Western Regional Office or the BIA Southern Paiute Agency at the addresses shown above between 7:45 a.m. and 4:30 p.m., Monday through Friday, excluding Federal holidays. Comments on the DEIS should be as specific as possible.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment (including your personal identifying information) may be made publicly available at any time. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

Thank you for your interest and we look forward to receiving your comments on the K Road Moapa Solar Generation Facility DEIS.

Sincerely,

Regional Director

Enclosures: Location Map

This page intended to be blank.

Draft EIS Public Meeting Mailing List

Josh Reid
Brownstein Hyatt Farber Schreck, LLP
100 North City Parkway
Suite 1600
Las Vegas, NV 89106-4614

Amy Heuslein
Bureau of Indian Affairs
Western Regional Office Branch of
Environmental Quality Services
2600 North Central Avenue
4th Floor Mail Room
Phoenix, AZ 85004-3008

Karen Vitulano
USEPA Region 9 – Communities and
Ecosystems Division
75 Hawthorne Street, CED – 2
San Francisco, CA 94105

Mark Chandler
Bureau of Land Management
Las Vegas Field Office
4701 North Torrey Pines Drive
Las Vegas, NV 89130

Christina M. Varela
Assistant Realty Specialist
Southern Paiute Agency
Bureau of Indian Affairs
P.O. Box 720
St. George, UT 84771

Kellie Youngbear
Agency Superintendent
Southern Paiute Agency
Bureau of Indian Affairs
P.O. Box 720
St. George, UT 84771

William Anderson
Chairman
1 Lincoln Street
PO Box 340
Moapa, NV 89025

Steve Cooke
Chief, Environmental Services Division
Nevada Department of Transportation
1263 South Stewart Street
Carson City, NV 89712

Patricia McQueary, Project Manager
US Army Corps of Engineers
St. George Regulatory Office
321 N Mall Drive, Suite L-101
St. George, Utah 84790

Michael Burroughs
US Fish and Wildlife Service
Southern Nevada Field Office
4701 North Torrey Pines Drive
Las Vegas, NV 89130

The Nature Conservancy
1771 East Flamingo Road, Suite 104 A
Las Vegas, NV 89119

John Hiatt – Conservation Committee Chair
Red Rock Audubon Society
PO Box 96691
Las Vegas, NV 89193

Ray Nelson – President
Board of Trustees
Lahontan Audubon Society
P.O. Box 2304
Reno, NV 89505

Desert Tortoise Council
PO Box 3273
Beaumont, CA 92223

Friends of Nevada Wilderness
PO Box 33155
Las Vegas, NV 89133

Draft EIS Public Meeting Mailing List

Nevada Wilderness Project
Southern Nevada Office
7465 West Lake Mead Blvd Suite #105
Las Vegas, NV 89128

Sierra Club
732 South 6th Street
Las Vegas, NV 89101-6948

Sierra Nevada Alliance
PO Box 7989
South Lake Tahoe, CA 96158

Nevada Clean Energy Campaign
Emily Rhodenbaugh
Conservation Organizer
250 Bell Street
Reno, NV 89503

Center for Energy Efficiency and
Renewable Technologies
1100 11th Street, Suite 311
Sacramento, CA 95814

Environment America
3435 Wilshire Blvd. #385
Los Angeles, CA 90010

Environmental Defense Fund
1107 9th Street, Suite 540
Sacramento, CA 95814

Great Basin Resource Watch
85 Keystone Avenue, Suite K
Reno, NV 89503

Nevada Wildlife Federation
PO Box 71238
Reno, NV 89570

Natural Resources Defense Council
1314 Second Street
Santa Monica, CA 90401

Nevada Conservation League
7473 West Lake Mead Blvd
Suite 100
Las Vegas, NV 89128

Western Resource Advocates
204 North Minnesota Street
Suite A
Carson City, NV 89703
Center for Biological Diversity
PO Box 710
Tucson, AZ 85702-0710

Nevada Department of Wildlife
Southern Region
4747 Vegas Drive
Las Vegas, NV 89108

Nevada Natural Heritage Program
901 South Stewart Street
Suite 5002
Carson City, NV 89701-5245

Nevada Department of Conservation and
Natural Resources
Las Vegas Office
2030 E Flamingo Rd, Ste 230
Las Vegas, NV 89119-0837

Clark County Department of Comprehensive
Planning
Clark County Government Center
500 South Grand Central Parkway
Las Vegas, NV 89155

Nevada Department of Air Quality and
Environmental Management
Clark County Government Center
500 South Grand Central Parkway
Las Vegas, NV 89155

Nevada Natural Resource Education Council
PO Box 4741
Carson City, NV 89702-4741

Draft EIS Public Meeting Mailing List

Department of Air Quality and
Environmental Management
Clark County Desert Conservation Program
Clark County Government Center
500 South Grand Central Parkway
Las Vegas, NV 89155-5201

Clark County Regional Flood Control
District
600 South Grand Central Parkway
Suite 300
Las Vegas, NV 89106-4511

Nevada Division of Environmental
Protection
901 South Stewart Street, Suite 4001
Carson City, Nevada 89701–5249

Natural Resource Conservation Service
Mojave Special Projects Office
Parc Place Professional Complex
5820 South Pecos Road
Building A, Suite 400
Las Vegas, NV 89120

Nevada Energy
Environmental Department
PO Box 98910
Las Vegas, Nevada 89151-0001

Nevada Energy
Corporate Headquarters
Environmental Department
6226 West Sahara Avenue
Las Vegas, Nevada 89146

Conservation District of Southern Nevada
5820 South Pecos Road A-400
Las Vegas, NV 89120

The Conservation Alliance
PO Box 1275
Bend, OR 97709

Friends of Gold Butte
Nancy Hall, President
PO Box 3664
Mesquite, NV 89024

Nevada State Historic Preservation Office
100 North Stewart Street
Carson City, NV 89701-4285

Nevada Environmental Coalition, Inc
10720 Button Willow Drive
Las Vegas, NV 89134

Union Pacific Railroad Company
91 North Gibson Road
Henderson, NV 89014

Southern Nevada Water Authority
1001 S. Valley View Blvd
Las Vegas, NV 89153

Nellis Air Force Base
99 ABW/PA
4430 Grissom Avenue
Suite 107
Nellis AFB, NV 89191

Professor Paul Friesema
Environmental Policy and Culture Program
227 Scott Hall, Northwestern University
Evanston, IL.60208-1006

This page intended to be blank.

Comment Type Codes

Type	Type Code
Individual	I
Government Agency	G
Non-governmental Organization (special interest)	O
Business	B
Tribe	T
State	S

Resource Issue Identification

Resource Code	Resource Issue
ALT	Alternative
AQ	Air Quality
CCE	Climate Change Effects
CUM	Cumulative Impacts
HAB	Habitat
HAZ	Hazardous Materials / Waste Management
HYD	Hydrology
MS	Miscellaneous
PN	Purpose and Need
PV	Photovoltaic
VEG	Vegetation

Comment Disposition

Disposition Code	Comment Disposition	Explanation
PRO	Process	Identifies certain elements of the NEPA process that must be documented and disclosed in the EIS, but does not require specific resource analysis in the EIS.
PN	Purpose and Need	Requires additional documentation or clarification of the project Purpose and Need.
ALT	Alternatives Development	Requires analysis of existing alternatives or consideration of new alternatives.
IA	Impact Analysis	Requires EIS analysis of impacts to specific resources of concern.
OOS	Out of Scope	Comments receiving the disposition code OOS are not addressed in the EIS. These are comments that are not within the scope of the BIA's decision regarding the proposed solar facility.

Acronym List

AFY	Acre-Feet per Year
BLM	Bureau of Land Management
BMP	Best Management Practice
CEQ	Commission on Environmental Quality
DEIS	Draft Environmental Impact Statement
DETO	Desert Tortoise
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
GIS	Geographic Information System
KOP	Kick Off Point
kV	Kilovolt
LORS	Laws, Ordinances, Regulations, and Standards
MW	Megawatt
NEPA	National Environmental Policy Act
NHT	National Historic Trail
NPS	National Park Service
OST	Old Spanish Trail
PBO	Programmatic Biological Opinion
ROW	Right-of-way
SWPPP	Stormwater Pollution Prevention Plan
T&E	Threatened & Endangered
USFWS	U. S. Fish and Wildlife Service

Table 1. Response to Public Comment on the Draft EIS for the K Road Moapa Solar Generation Facility

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
1	T	1	1	HAZ	Has K Road thought to erect a transfer station pre & post construction to handle trash (recycle materials: plastic, aluminum cans, construction materials). Transfer station a fenced compound with recyclable bins with lids to keep crows and vector controls in check.	IA	Transfer station(s), not specifically called out in the DEIS, will be utilized during construction and put in place permanently upon operation. These details will be discussed in the Hazardous Materials Plan, Stormwater Pollution Prevention Plan (SWPPP), and documented in the Bird and Bat Conservation Strategy document. The SWPPP and Hazardous Material Plan will be developed and approved by the appropriate agency prior to construction.
2	T	1	2	AQ	Possible pave or Type 2 gravel on access road to facility to minimize dust abatement. Also, with paved or Type 2 material on access road tortoises become more visible.	IA	Gravel will be used on the access road as outlined in Chapter 4, Section 4.2.2 of the FEIS. Biological monitors will be in place (Section 4.8.3.1) along access roads as well as other mitigation measures to ensure safety to Desert Tortoise (DETO) as outlined in the DETO Translocation Plan.
3	T	1	3	WLD	Look at seasonal speed limit signs for tortoise activity.	IA	Vehicular speeds will not exceed 25mph as dictated in the DETO Translocation Plan. Speed limit signs will be posted along the access road. This has been updated in Chapter 4, Section 4.8.4.1.
4	G	2	1	MS	The U. S. Geological Survey has reviewed the	OOS	Thank you, your comment is

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					Draft EIS for the Proposed K Road Moapa Solar Generation Facility, Clark County, Nevada. In this regard, we have no comments at this time.		noted.
5	G	3	1	MS	We believe that you should refer to the National Trail System Act, and describe agency roles in the administration of National Historic Trails in your legal mandate descriptions in the appendices. The legal reference is 16 USC 1251.	OOS	We have added a description of the National Trails System Act in Appendix A, Section 1.1.6.9.
6	G	3	3	ALT	We strongly prefer the western optional location eliminated from detailed analysis shown on Figure 2-3 because it would have little to no visual effect to the Old Spanish NHT viewshed. We wonder why this optional location was not analyzed as an action alternative instead of being arbitrarily eliminated.	ALT	The optional location was dismissed for several reasons as stated in Chapter 2, Section 2.3.3.1. The Visual Assessment, in Chapter 4, Section 4.13.4 has been updated to accurately address visual impacts from the newly mapped trail.
7	G	3	4	PN	On page 3-52 and 4-59, you combine the Mormon Road and the Old Spanish Trail together as the "Old Spanish Trail/Mormon Road National Historic Trail." This is not accurate. The term "National Historic Trail" is a specific legal designation. In this area the only National Historic Trail is the Old Spanish National Historic Trail. Congress designated the route of the Old Spanish National Historic Trail, not the National Park Service, and not the Bureau of Land Management, nor is either agency empowered to arbitrarily change the designated route shown on the maps that were part of the Act passed by Congress, add or remove segments, or change its name. The period of significance for the Old Spanish National Historic Trail is 1829-1848. What was later termed the Mormon Road is later	PN	We accept this comment and have referred to the route designated by Congress as the Old Spanish National Historic Trail. Other trail segments in the vicinity of the proposed project are referred to as Old Spanish Trail/Mormon Road. We have changed the descriptions in the text (Chapter 3, Section 3.9.1) to accurately make this distinction as advised by NPS.

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					and is not associated with the events that made the Old Spanish Trail nationally significant. We would suggest the wording "Old Spanish National Historic Trail/Mormon Road" if you wish to combine the two, or just leave out the words "National Historic Trail" if you wish to refer to the generic version of the trail, as in the McBride and Rolf 2001 National Register nomination.		
8	G	3	5	MS	You state on page 3-52 that you asked the Old Spanish Trail Association about the trail, and published the letter you sent them, to which they apparently did not respond, since no response is published. If they did not respond, you should probably state that, rather than stating, "Inquiries to the National and local chapters of the Old Spanish Trail Association regarding the Old Spanish Trail corridors in the Proposed Project area resulted in no concerns." No response is not quite the same thing as no concerns. If the Association did respond, please publish their communication.	OOS	The Association did not formally respond to our letter; however, the Association's Nevada Chapter President did participate in a site visit prior to the public meeting and verbally expressed comfort with the proposed project's effects, or lack thereof, on the Old Spanish Trail/Mormon Road and, by extension, the Old Spanish NHT. We agree that no response is not the same as no concern. The text in Chapter 3, Section 3.9.1 has been revised.
9	G	3	6	CUM	On page 3-53, you state that "No segments contributing to the eligibility or significance of either of these properties have been identified in the study area." This statement is not accurate. In fact, there is a high-potential route segment of the Old Spanish NHT identified in our draft Comprehensive Management Plan for the trail that lies immediately south and adjacent to the project	IA	This segment of the Old Spanish NHT has been updated in Figure 3-14 with the GIS data sent by the NPS. These data show that the Old Spanish NHT is on the opposite side of I-15 between KOP 1 and 3. The GIS data also show both KOP 4 and 5

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					area called the California Crossing High Potential Route Segment. A high-potential route segment is defined in the National Trail System Act as a segment of a trail which would afford high quality recreation experience in a portion of the route having greater than average scenic values or affording an opportunity to vicariously share the experience of the original users of a historic route. A high potential route segment does contribute to the significance of the trail. It is the opinion of NTIR that this undertaking, particularly the transmission line and facilities, may have adverse visual effects on this high potential route segment. The transmission towers are up to 150 feet high and would be visible for many miles. None of your visual effects key observation points were taken along this high potential route segment, which lies between your KOP 1 and KOP 3. We request that additional visual effects analysis be conducted for the effects of the transmission lines and the solar plant on the viewshed of the California Crossing high potential route segment.		are within ½ mile of the Old Spanish NHT. Visual simulations from these locations are deemed fair representations from the perspective of the Old Spanish NHT and adequate to make a 'no impact' statement. Figure 3-14 also shows that the solar facility and transmission structures are not visible from a majority of the Old Spanish NHT for that six mile segment closest to the project area. All transmission towers will be placed adjacent (as much as practical) to the existing, two 500kV transmission line tower structures currently within the utility corridor.
10	G	3	7	MS	On page 4-60, you state, "A segment of the original Old Spanish Trail route has been located south of the Proposed Project area along the California Wash by the BLM, but not formally documented, that is more accurate than the current National Park Service route." This subjective and unattributed statement is incorrect on several counts. • First, since it is not formally documented, there is no particular reason to think that the indicated segment is associated with the Old	OOS	This incorrect and unverified information in Chapter 4, Section 4.9 has been modified in response to this comment.

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					Spanish National Historic Trail at all, or that is accurately mapped in any way. No evidence is presented as to its date, no documentary evidence is presented as to its association with the events that make the Old Spanish Trail significant, and no historic maps or other evidence are presented showing the location of this alleged segment at any particular period in time. In the absence of any real evidence, this is just another old trail segment that could be anything, and should not be considered part of the Old Spanish National Historic Trail. • Secondly, the National Park Service did not designate the current route, Congress did. Until Congress alters the act that created the Old Spanish National Historic Trail, the route they identified on the maps associated with the law they passed is the official route of the Old Spanish National Historic Trail. Agencies are not empowered to alter the route arbitrarily based on opinion. When additional segments are proposed for addition to a National Historic Trail, they are studied and evaluated, and if legitimate, the results are presented for congressional action to add them to the particular National Historic Trail.		
11	G	3	8	PN	Your KOP 5 is thus not on the Old Spanish National Historic Trail, so please clarify this.	PN	KOP 5 is ½ mile east of the Old Spanish NHT. The text has been clarified in Chapter 4, Section 4.9.2.
12	G	3	9	PV	NTIR realizes that reserved tribal lands are	IA	See response to Comment

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					sovereign, and we have no wish to interfere with tribal activities. We support the concept of alternative energy generation. Photovoltaic facilities of the type proposed are generally not as high off the ground as some alternative energy generating equipment and would thus be highly preferable to other solar technologies in terms of visual effects. However, we are concerned that the setting of the California Crossing high potential route segment of the Old Spanish National Historic Trail could be adversely affected by visual impacts and contrast from transmission lines running off the site, with poles up to 150 feet tall, substations, maintenance structures, maintenance roads, and associated noise, dust, or light from the proposed site. We request that additional visual effects analysis be conducted for the effects of the transmission lines and the solar plant from the California Crossing high potential route segment.		#10
13	G	3	10	MS	Additionally, we request that the errors in the administrative and descriptive language described above be corrected for the Final Environmental Impact Statement.	OOS	Changes have been made accordingly in Chapter 3, Section 3.9.1 and Chapter 4, Section 4.9.2.
14	S	4	1	MS	Overall, the measures to mitigate and manage construction and operation of the facility and appurtenances as they relate to biological resources are satisfactory as expected. The Department is supportive of the use of tubular-H design of 345kV and 500kV transmission structures as opposed to lattice-style designs. While time and cost considerations were identified, the Department believes that the tubular-H design would be most effective in discouraging subsidy of perch and nest sites to raptors and ravens mindful of the increased potential for	OOS	Text has been added in Chapter 5, Section 5.1.4 to include inverted Y-bars to discourage perching should tubular H design structures or similar be used for the Project.

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					predation on desert tortoises and other small wildlife. The horizontal member of the transmission structure should be fitted with an inverted-Y bar on top that discourages perching. This is in line to considerations by Prather & Messmer (2010). See attached NDOW comment letter for citation.		
15	S	4	2	HAB	Indirect significant impacts are stated possibly affecting Moapa Dace as a result of groundwater pumping. How will the project proponent avoid and monitor for connectivity and indirect affects to water and wildlife resources of the nearby Warm Springs area and the Muddy River system?	IA	Monitoring for connectivity and indirect effects will not occur. Past hydraulic studies identified in Chapter 4, Section 4.8.4.1 for the Calpine Project result in no affect as a result of pumping 7,000AFY. The solar project proposes only 72AFY during construction and therefore will not have affect to the Muddy Rivers System. Incidental take to the Moapa Dace is fully addressed in the Biological Opinion provided by the USFWS.
16	S	4	3	HYD	The document does not fully describe groundwater connectivity between the project site hydrographic basins of Garnett Valley and California Wash to the Muddy River-Warm Springs area. The Warm Springs area harbors breeding populations of the southwestern willow flycatcher and yellow-billed cuckoo as well as the Moapa Dace.	IA	Groundwater connectivity is not relevant other than what is stated in the DEIS and described in response to Comment # 15.
17	S	4	4	WLD	In reviewing species descriptions, common and scientific nomenclature used was either misspelled or indicated inaccurate representation of wildlife for the project area and vicinity. Reviewing the botanical descriptions showed similar problems. Attention to this would strengthen the	IA	Nomenclature has been verified and updated for misspelling. Representation of some flora and fauna is due to applicable U.S. Fish and Wildlife County listed T&E species.

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					scientific credibility of the document.		
18	S	4	5	WLD	Mindful that context of the wild burro description was to the Muddy HMA, 20 miles distant from the project site, it should be understood that while wild burros are a biological resource, they are not defined as wildlife by either federal or state laws and should be removed from section 3.8.2.1.	IA	We understand that the biological technicality may be that wild burros are a "feral" rather than a "wild" animal but nevertheless protected under the Wild Free-roaming Horses and Burros Act, Pub. L. 92-165, 16 U.S.C. 1331-1340, ("Wild Horse and Burro Act"). The U.S. Supreme Court upheld the constitutionality of the Act (and the horses and burros may be legally called "wild") *Kleppe v. New Mexico*, 426 U.S. 529 (1976).
19	S	4	6	WLD	• The only clear distinction between these two sections (3.8.3 & 3.8.4) is that faunal species are addressed in 3.8.3 and floral species are addressed in 3.8.4. Otherwise the distinction in the use of the term *Special Status Species* is unclear. • Consulting the October 2011 listing of Nevada BLM Sensitive Species would help update considerations for species addressed in these sections as well as section 3.8.2.1.	IA	Chapter 3, Section 3.8.3 header has been changed to address the entire range of State listed and BLM Special status species; thus deleting the 3.8.4 header.
20	S	4	7	WLD	For lands affected by the project not located on tribal lands (i.e. BLM right-of-way), inclusive of considerations relevant to the anticipated *Desert Tortoise Relocation Plan* (Appendix B), a Special Purpose Permit must be obtained if desert tortoises are encountered and need to be moved out of harm's way as	IA	Noted: this permit will be applied for that portion of the Project not on the Reservation by the Proponent. The Permit Table 1-3 has been updated in Chapter 1.

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					per NAC 503.093 and NRS 503.597.		
21	S	4	8	WLD	In addition with measures implemented to avoid conservation conflicts with species similar to the desert tortoise, inclusion of the Department's Gila monster protocol as part of project worker education and biological monitoring is recommended. The Gila monster protocol is accessible online at: http://www.ndow.org/wild/conservation/reptile/07Gila_Protocol.pdf.	IA	Gila monster protocol has been incorporated into the FEIS Chapter 3, Section 3.8.3.
22	O	5	2	WLD	Additional desert tortoise surveys should be conducted this spring to better determine tortoise density.	IA	The decision to not complete further Spring surveys was concluded after consultation with the USFWS. The Desert Tortoise Translocation Plan that was prepared following the USFWS Guidance Document and is subject to their oversight and approval. The Plan describes the flexibility of translocating additional tortoises if the projected density has been underestimated. The October survey was considered adequate for preparing this plan.
23	O	5	3	WLD	The DEIS states that a translocation plan will be developed along with a Biological Opinion required by the ESA. Such plan should heed the above warning (see attached Conservation Group Formal Letter – Scientific Advisory Committee statement, pg. 4), and include the called for specific monitoring and research. We further request that the translocation plan be made available for public review and comment prior to final decision being made on this project.	OOS	This plan will be included as Appendix B of the FEIS, and publicly available prior to the Record of Decision.

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
24	O	5	4	WLD	We are further concerned that the proposed 6,000 acre recipient site does not provide adequate quality desert tortoise habitat. The tortoise habitat on the Project site should be analyzed to determine if it is Category I or II habitat for desert tortoise. While we agree that a direct comparison of numbers is clouded by a difference in survey protocols used, we are nonetheless concerned that any translocation site has the quality habitat and the capacity to absorb the number of tortoises envisioned to be in need of translocation.	IA	Surveys indicate that the species composition of the translocation site is comparable to the project site where removal will occur. Care will be taken to insure that each translocated tortoise is provided the average acreage for its habitat. Further, qualitative and quantitative vegetation studies will be conducted in Spring for this purpose and to be taken into consideration while drafting the DETO disposition plan.
25	O	5	5	HAB	Any translocation site must be protected from degradation in perpetuity. Translocation land should be preserved on the Tribal Lands off-site of the Project in a ratio of several acres preserved in perpetuity for every acre disturbed by the Project, with the Tribe and the Department of the Interior to commit to taking all legal actions to preserve such land in perpetuity (including, but not limited to the execution and approval of perpetual conservation easements and/or amendments to the Tribal Ordinance). The Tribe indicated that the recipient site would not be fenced, leading to further concerns on what regulatory or other mechanism will ensure the long term protection of the site and the resident tortoises. This issue must be satisfactorily addressed in the final EIS and decision.	OOS	There are plans to protect the translocation site through Tribal Ordinance, which will be on tribal lands through the life of the project. Land area required is based on the average acreage required for each individual tortoise and the number of tortoises relocated. The translocation site is three times larger than the Proposed Project site. Text has been updated in Chapter 5, Section 5.1.4.
26	O	5	6	WLD	Another issue related to translocation is that of the disposition of individuals that are seropositive when given an enzyme-linked immunosorbent assay. Hudson and others	IA	The disposition of seropositive animals will be included in the Desert Tortoise Disposition Plan.

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					postulate that in some cases a serpositive indication may merely be an indication of high natural immunity or a survivor of a previous infection rather than an infectious individual. Hudson offers recommendations related to translocation which should be incorporated into the translocation plan and implemented. We also urge that a formal well-designed study of the long-term survival of translocated tortoises be required as a mitigation measure by the proponent to test whether there are any differences among asymthematic serpositive individuals and asymthematic sernegative individuals.		The Service will consider release of seropositive animals that otherwise appear healthy based on a thorough health assessment. The Monitoring Plan for translocated tortoises will be contained in the Translocation Plan and will require approval by the USFWS.
27	O	5	7	WLD	During October 2012 desert tortoise surveys, three burrowing owl burrows were noted, although in cliffs, where solar infrastructure would presumably not be located. Burrowing owls should be passively relocated to the extent their burrows are impacted.	IA	Burrowing owls will be passively relocated out of harm's way. This verbiage will be added to the FEIS in Chapter 3, Section 3.8.3.
28	O	5	8	VEG	Plant surveys should be conducted for Beaverdam breadroot, three-corner milkvetch, sticky buckwheat, rosy twotoned penstemon, and white bearpoppy during spring flowering periods and any found plant locations geospatially mapped.	IA	Plant surveys will take place within the entirety of the BLM utility issued ROWs and within random quadrants within the proposed solar facility as well as the primary and secondary recipient areas. The best available information and previous survey data were used for EIS analysis, because of limitations associated with these data and the project schedule, Per Chapter 4, Section 4.8.4, Surveys for these plants would be conducted prior to any construction of the Proposed

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
							Project (Spring 2012) by a BLM approved biologist. Impacts to documented plants would be avoided if practical or reduced through use of construction BMPs and habitat restoration. If impacts cannot be avoided then impacts would be mitigated through seed collections from affected populations and a potential sponsorship of each affected species via the Center for Plant Conservation imperiled plant collection.
29	O	5	9	VEG	• Avoidance of sensitive and state-listed plants should be taken into account when developing the Project footprint and layout, and solar infrastructure should be sited and arranged to avoid impacting such plants. • A trained desert botanist should be on-site during construction working with crews to avoid or minimize harm. • Depending on the characteristics of the species and the specific locations, plants should be salvaged or fenced and protected from harm to the maximum extent practical. Cacti, yucca, and appropriate sensitive plants should be salvaged and made available for restoration on-site and elsewhere. • Currently, the Tribal Ordinance does not dictate how state protected species will be applied or dealt with	IA	State-listing status is not regulated on Tribal lands. See response to Comment #28; Per Section 5.1.4, trained biologists will be onsite during construction to minimize impacts to biological resources. 3rd bullet – The FEIS details mitigation of plant species, specifically cactus in Chapter 4, Section 4.5.2.

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					on tribal lands. To the extent it is not possible to avoid or salvage sensitive or state-listed plants, the Proponent should work with a trained desert botanist to identify other portions of the Tribal Lands on which the species occur and arrange with the Tribe and the Department of the Interior to preserve such lands for conservation purposes in perpetuity as compensation for the removal of habitat for such sensitive or state-listed plant species.		
30	O	5	10	VEG	The treatment or spreading of noxious or invasive weeds could result in inadvertent mortality or injury of the native plant species. We request the public be afforded the chance to view and comment on the Weed Management Plan, which was not included in the DEIS.	OOS	This plan will be included as Appendix C of the FEIS, and publicly available prior to the Record of Decision.
31	O	5	11	HAB	The DEIS states that the Proponent will prepare a Site Restoration Plan for decommissioning. We request the public be afforded the chance to view and comment on the Site Restoration Plan, which was not included in the DEIS.	OOS	This plan will be included as Appendix F of the FEIS, and publicly available prior to the Record of Decision.
32	O	5	12	WLD	The DEIS states that an "Avian and Bat Protection Plan" will be produced to mitigate the take and adverse impacts to species protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, but fails to provide any details as to how the mitigation would be accomplished. We request that the public be afforded the opportunity to review the Avian and Bat Protection Plan prior to a final decision being made on the approval of this project. The proposed mitigations in section 5.1.4 of the	OOS	This plan will be included as Appendix O of the FEIS, and publicly available prior to the Record of Decision. Specific measures detailed in the Plan have been added to Chapter 5 – Mitigation of the FEIS.

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					DEIS are a good beginning.		
33	O	5	13	WLD	While the DEIS assures us that the 72 acre-feet of ground water needed for this project will have no independent effects on this endangered species (Moapa Dace), we remain concerned. The White River Carbonate Flow System, of which the California Wash Basin is a part, is under heavy assault from on-going and proposed development. We believe some form of mitigation should be required to help ensure adequate monitoring of the spring flows vital to the dace should be required.	IA	See Response to Comment # 16 The DEIS restates the conclusions of a Programmatic Biological Opinion (PBO) based on a Memorandum of Agreement that allowed up to 2500 afy may be withdrawn by the Tribe. The total withdrawal of 16,100 afy and the potential effects to the Moapa dace were evaluated in that PBO.
34	O	5	14	WLD	The Project site is within the range of the Gila monster. The Proponent should develop a plan for translocation Gila monsters if encountered during construction activities.	IA	State protocol for Gila Monsters will be followed. See Response to Comment #21
35	O	5	15	CUM	The DEIS limits the geographic scope of biological impacts to within the Tribal Lands. Although the DEIS also states that projects were included in cumulative analysis if information on them was available in the BLM's GeoCommunicator mapping system, the DEIS does not include a discussion of the cumulative impacts caused by numerous proposed solar energy developments on BLM lands in Clark County. We believe the geographic scope of biological impacts should be expanded to an area greater than the Tribal Lands to address ecosystem-level impacts, and should, at a minimum, address the cumulative impacts of multiple proposed large solar energy developments on adjacent or nearby BLM lands.	PN	CEQ guidance (Jan. 1997) states that "Project specific analyses are usually conducted on the scale of …..Installation boundaries; whereas cumulative effects analysis should be conducted on the scale of human communities, landscapes, watersheds, or airsheds". Further, The 2005 CEQ guidance Memorandum "Guidance on the Consideration of Past Actions in Cumulative Effects Analysis" states on Page 2 that "agencies may

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
							properly limit the scope of their cumulative effects analysis based on practical considerations" and goes on to say, "The extent and form of the information needed to analyze appropriately the cumulative effects of a proposed action and alternatives under NEPA varies widely and must be determined by the federal agency proposing the action on a case-by-case-basis. It was our intention to utilize "landscapes" using the Valley as our Cumulative effects area; however, we concur with the guidance and will utilize the "watershed", in this case two watersheds to redraw this biological boundary. Watershed in this case is synonymous with "landscapes" and therefore covers both specifications in the CEQ document. The mapping will be updated and the analysis carried out appropriately within the FEIS.
36	O	6	1	HYD	We are concerned that the discussion of the hydrology of the area and the plans for dealing with run-off waters from the project are inadequate. Some of the soils on the site are easily eroded by flowing water. The amount of run-off from the approximately 1400 acres	IA	Water will not flow from the solar panels directly to the ephemeral washes; therefore, the statement about "impermeable" surfaces is false. The stormwater will hit

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					of solar panels at full build-out will be quite significant. It is not unknown to have summer thunderstorm events that can dump up to two inches of rain in a 30 minute period in an area of a few thousand acres. When that happens at the site of this project the short term run-off will amount to more than 200 acre-feet of water, which will flow down California Wash into the Moapa Valley. Historically, there have been severe floods in the Moapa Valley due to flood waters coming from the California Wash. It appears this project will exacerbate flood flows in the California Wash due to the large area of absolutely impermeable surface of the solar panels. A statement that flood flows from this project will not exceed pre-project flows needs some clear and convincing documentation.		the ground and flow in a similar manner to pre-construction. Vegetation left in place as well as topsoil replacement will aid in reduction of stormwater runoff and reduce velocity of sheetwash. Other controls such as berms and gabions within the ephemeral washes as noted in Chapter 4, Section 4.4.2 will also aid in controlling stormwater flows similar or less than that of pre-construction levels.
37	O	6	2	HYD	The DEIS talks about using gabions and detention basins for trapping sediment but doesn't discuss actual acreage of detention basins, volumes of water to be detained or release rates or how sediment accumulation in detention basins would be dealt with in order to preserve the functionality of the basins. Also, there is no mention of how the detention basins would be handled so as to prevent growth of tamarisk, a noxious weed in this area. These are items that need to be spelled out in detail in the DEIS.	IA	Detention basins are currently not planned for this project. Sedimentation at gabions or within specific areas of the ephemeral drainages would be maintained according to a Stormwater Pollution Prevention Plan that will be prepared prior to any ground disturbing activities. Tamarisk is not currently found on site, however will be controlled according to a Weed Management Plan Found in Appendix C.
38	O	6	3	VEG	In terms of sensitive plants there is a list of cacti and some shrubs but no annual plants are mentioned. This is probably due to the fact that the tortoise surveys were done in the Fall	IA	Spring surveys for BLM and State sensitive species will be competed in Spring 2012 the on those portions of the

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					when annuals are not normally present. The result is that species like the Beaverdam breadroot (*Pediomelum castoreum*) and three-corner milkvetch (*Astragalus geyeri* var. *triquetrus*) are only mentioned as part of a literature survey. There is a significant population of Beaverdam breadroot a relatively short distance to the west of the project site on the southwest corner of the Moapa Paiute Reservation and threecorner milkvetch occurs in areas of eolian sand along and south of the powerline corridor in Dry Lake Valley not far west of the Crystal substation. The list of species considered in the biological assessment includes the Mt. Charleston Blue Butterfly that does not occur on the site or on impacted habitat but yet ignores important plant species which are found on or near the site. It is not logical to plan a pre-construction survey to assess the status of annual and perennial vegetation on the site just before the entire site is graded. The purpose of a NEPA analysis is to provide all pertinent information prior to project approval so that problems can be identified before irreversible decisions are made and actions taken.		Project managed by the BLM. State and BLM sensitive species are not regulated on Tribal lands. Please see the response to Comment #s 28 and 29.
39	O	6	4	WLD	No mention is made of the Gila Monsters although they definitely occur in Dry Lake Valley and the lower reaches of the Arrow Canyon range only a short distance from the project site.	IA	Gila Monster Protocol has been added to the FEIS. See response to Comment # 21
40	O	6	5	WLD	The project proponents are planning to relocate desert tortoises collected from the site to another area on the Reservation but no specific plan for how this would be done or exactly where the relocation area would be is included. To just state that details will be	IA	Additional details to the DETO Translocation Plan are included in the FEIS; the complete Plan will be included as Appendix B in the FEIS for review.

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					worked out later is insufficient. Given the poor track record in relocating tortoises in the Mojave Desert the translocation plan, with details about preventing excessive predation, needs to be spelled out in this DEIS. The precarious state of tortoise populations in the Mojave Desert, and particularly the distinct population segment in the Northeast Mojave, mandates that the very best techniques for finding and relocating tortoises be employed. It appears that even under the best scenario all the hatchlings and most of the juveniles on the site will be lost with the construction of this project, so it is imperative that the adults that are captured continue to be part of a successful breeding population.		
41	O	6	6	PV	In the area of visual resources the pole structure towers proposed will be much more noticeable than the lattice style towers used in the existing power line corridor to the north of the site. Since lattice style towers have been in common use for many years for high voltage transmission lines the statement that there is insufficient time for testing and evaluating the lattice design doesn't make sense. Lattice style towers would be much less visually intrusive than the steel pole towers being proposed.	PN	Nevada Department of Wildlife supports the use of poles because it reduces perching of predators; however, final design of poles has not been completed and lattice structures are still under consideration. Changes will be made in Chapter 5, Section 5.1.4 to reflect this.
42	G	7	2	HYD	Comments are in regards to pages 4-18 and 4-19. The detailed drainage study should occur prior to project implementation, so that the additional information it would yield can inform any needed adjustments in the project design. Such adjustments to project design could include increased buffers around the drainages and the inclusion of small detention basins. We recommend including the detailed drainage study in the Final EIS.	IA	The Corps of Engineers made a determination that there are no jurisdictional waters of the U.S. present on the site. During this determination it was also noted that no bed and bank occurred in the existing ephemeral channels on the East side of the solar facility where the floodwater

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					The adaptive management approach for managing erosion should be documented in the mitigation measures listed in Chapter 5. We recommend that a framework for an adaptive management plan be included in the Final EIS, including a discussion of the criteria that will be used to evaluate effectiveness of the erosion and sedimentation control measures and what modifications are available to address typical problems, to serve as a troubleshooting guide. For example, the framework should describe actions that could be taken if excessive erosion or sedimentation is observed. Based on the information presented in the DEIS, we recommend that (1) the six large drainages be given wide buffers so the channels may adjust to the new hydraulic conditions without the need for major human-made structures (2) permanent sediment and channel elevation monitoring stations be established to assist in the adaptive management of erosion and sedimentation (3) low-impact development techniques, such as bioretention, be explored as potential mitigation for changes in the drainage pattern.		eventually exit under existing Railroad culverts. This suggests that natural drainage features reduce the floodwater flow a significant level as to reduce scour and thus sedimentation downstream. Topography of the area will not be greatly affected as caliche and rock are only covered by 1-foot of topsoil and in some cases, only inches. While leaving vegetation in place where practical, it is believed that post construction stormwater runoff will only slightly exceed or not exceed pre-construction levels. With the addition of in stream gabions to control these flows and management of these controls via a Stormwater Pollution Prevention Plan it has been determined that a detailed drainage study will not be required for on-site runoff. Due to the presence of six large, steep side drainages, maximum coverage by solar PV will be required to meet the proposed 350MW potential; however buffers will be used as much as practical around the ephemeral drains; this will be updated in the FEIS.

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
							Adaptive management measures has been updated and elaborated on in Chapter 5 - Mitigation.
43	G	7	3	AQ	This comment is in regards to Construction Vehicle Emissions. The mitigation measures that EPA previously recommended are reasonable, and we continue to recommend that they be incorporated into the project. Any approvals made by the BIA for the project should include a condition that the lessee incorporate the following measures into construction contracts. For more information on nonroad mobile sources and mitigation, see at http://www.epa.goc/nonroad. (1) Maintain and tune engines per manufacturer's specifications to perform EPA certification levels, where applicable, and to perform at verified standards applicable to retrofit technologies. (2) Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained. (3) Prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations. (4) If practicable, lease new, clean (diesel or retrofitted diesel) equipment. In general, commit to the best available emissions control technology. Tier 4 engines should be used for project construction equipment to the maximum extent feasible. (5) Utilize EPA-registered particulate traps and other appropriate controls where suitable to	IA	These recommendations have been made to the proper mitigation Section found in Chapter 5.

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					reduce emissions of diesel particulate matter and other pollutants at the construction site. (6) Develop construction traffic and parking management plan that minimizes traffic interference and maintains traffic flow.		
44	G	7	4	CUM	This comment is in regards to fully representing cumulative impacts on the desert tortoise. EPA recommends that the spatial scope of the cumulative impact assessment for the Mojave desert tortoise be expanded, consistent with the Council on Environmental Quality (CEQ) guidance. We recommend consulting with USFWS on an appropriate boundary for this analysis. We understand that the USFWS will consider impacts across the range of the species for the Biological Opinion that will be issued under Section 7 of the Endangered Species Act. BIA may wish to incorporate information from the BO into the Final EIS to improve this analysis. However, we note that the application and interpretation of the definition of cumulative impacts under NEPA and ESA differ, and BIA should ensure the analysis in the FEIS is consistent with CEQ guidance.	IA	CEQ guidance from the 1997 manual and 2005 memorandum has been applied to the FEIS per the comment. We have consulted with USFWS on impacts to the species within the cumulative impacts area. We have incorporated information from the Biological Opinion to improve the analysis. See Response to #35.
45	G	7	5	HYD	The DEIS contains contradictory information regarding the capacity of the water wells. Page 2-33 states that the secondary water source test wells are estimated to have the ability to deliver water at 1,000 to 1,500gpm, a capacity greater than the existing proposed use well, however Page 4-14 states that the existing proposed use well is capable of providing more than 1,700 gpm of water, which is obviously not less than the amount cited for the secondary water test wells on p.	IA	We have reviewed and clarified the flow rates from both wells. The Text on Page 4-14 has been updated. Text has been added to clarify use and mitigation measures on the secondary well access road. Well data from TH-1 has

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					2-33. The FEIS should clarify this. It should also provide additional information regarding the likelihood/frequency that the unimproved road to the secondary wells would be utilized, and ensure that mitigation measures are included to ensure desert tortoise do not get crushed on this road.		been updated on Page 4-14 to 60gpm.
46	G	7	6	PN	The induced growth (indirect effects) associated with the additions to the Travel Plaza that electrification would support (p. 2-19) should be disclosed.	PN	The Tribe has indicated that no future growth is planned; the FEIS has been updated with this text.
47	G	7	7	PN	In several places in the DEIS, there is reference to compliance with applicable federal, state and local laws and regulations, or with Laws, Ordinances, Regulations and Standards (LORS). Because the project is on tribal land, it is important to identify which laws are applicable, and if laws are not applicable, to identify the specific regulation or standard that is being specifically adopted for the project.	PN	The draft lease provides that "all Tenant Work shall be constructed in accordance with all building, construction and/or safety requirements (including, without limitation the Building Code, Electrical Code, Plumbing Code, Mechanical Code and Solar Energy Code) set forth in the Code of Clark County, Nevada which would be applicable to the Project if it were constructed under the jurisdiction of Clark County, Nevada." The above text has been substituted for areas in the FEIS where LORS is referenced.
48	G	7	8	PN	In many places throughout the DEIS, there is reference to using the "respective methodology prescribed by NEPA." NEPA does not prescribe methodologies, so this wording should be amended.	PRO	Text has been revised and statement removed.
49	G	7	9	HYD	The DEIS also notes that the drainages onsite	IA	Text has been updated to read

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					flow into the California Wash and then into the Muddy River (p. 4-17). The DEIS also states that "The Proposed Project does not contain, nor is tributary to, any waterbodies that are on Nevada's 303(d) list for exceeding state water quality standards (Nevada Division of Environmental Protection 2009)", but notes that the Muddy River is considered impaired and is on the 303(d) list (p. 3-16). This inconsistency should be corrected in the FEIS.		"nor is a DIRECT tributary"
50	G	7	10	MS	EPA previously recommended that water conservation features be included in the office and maintenance building's bathrooms and that, if landscaping will occur around the office, xeric or drought-tolerant native landscaping be used. We continue to recommend that low-flow toilets and faucets be installed in the offices and maintenance buildings, and that any landscaping minimize the use of irrigation water.	IA	Text has been added to address "xeric" landscaping if landscaping is used. Text has been added to include mitigation measures such as low-flow toilets and faucets and use of irrigation water.
51	G	7	11	MS	EPA previously commented against the use of single-sided printing for the Administrative DEIS, and we noted that the DEIS also uses single-sided printing. The BIA, as a federal agency, is subject to Executive Order 13514 – Federal Leadership in Environmental, Energy, and Economic Performance (October 5, 2009) which specifies that it is the policy of the United States that "Federal agencies shall…eliminate waste…". Additionally, the Federal Acquisition Regulation (48 CFR 23.703) states that agencies must "Promote cost-effective waste reduction…". We recommend that the FEIS be printed double-sided.	OOS	Double sided printing will be used.
52	O	8	1	MS	Jane Feldman, Sierra Club, commented if there will be a 30 or 45 day comment period for the Desert Tortoise Translocation Plan and	PRO	These plans will be included as Appendix C and Appendix O of the FEIS, and

Number	Respondent Type	Letter Number	Comment Number	Resource Code	Comment	Disposition	Response
					the Avian and Bat Plan (Bird and Bat Conservation Strategy).		publicly available prior to the Record of Decision.
53	O	9	1	MS	Vinny Spotleson, Sierra Club, suggested that if more time was allowed to comment on documents such as on the draft EIS, translocation plan, etc., the less controversy should occur.	OOS	See Response to Comment #52
54	T	10	1	CUM	Vicki Simmons, tribal member, commented if aircraft will be affected by the Project and if aircraft will be allowed to fly over the Reservation.	IA	As assessed in the DEIS, there will be no impact to aircraft flying over or near the Proposed Project.
55	B	11	1	MS	John Hiett from Red Rock Audubon Society citizen asked if the Applicant had a power purchase agreement to date.	OOS	The Applicant is currently evaluating power purchase agreements.
ADDITIONAL COMMENTS							
1	Sierra Club/NRDC/Center for Biological Diversity				The development of renewable energy is a critical component of efforts to reduce carbon pollution and climate-warming gases, avoid the worst consequences of global warming, and to assist in meeting needed emission reductions. We strongly support the development of renewable energy production, and the generation of electricity from solar power, in particular.		Thank you for your comment.
2	Sierra Club/NRDC/Center for Biological Diversity				We commend the commitment of K Road Power (the "Proponent") to training and working with Tribal members. The Project will provide needed employment in the area, as well as revenue to the Tribe, while supporting the creation of a diverse, well-trained workforce whose skills can be transferred to meeting state and national renewable energy goals.		Thank you for your comment.

Table C-2. Contact Information for Respondents

Letter Number	Respondent Type	Last Name	First Name	Organization	Address	Date Received
1	Tribe	Daboda	Darren	MBOP-Env. Coordinator	PO Box 340, Moapa, Nevada 89025	December 14, 2011
2	Government	Johnson	Brenda	U.S. Geological Survey	USGS Mail Stop 423, Room 5A326, 12201 Sunrise Valley Dr., Reston, VA 20192	January 4, 2011
3	Government	Elliott	Mike	National Park Service, National Trails Intermountain Region	PO Box 728, Santa Fe, NM 87504	January 6, 2012
4	State	Hardenbrook	D. Bradford	Nevada Department of Wildlife	4747 Vegas Drive, Las Vegas, Nevada 89108	January 9, 2012
5	Non-governmental Organization	Mrowka	Rob	Center of Biological Diversity	4261 Lily Glen Ct, North Las Vegas, Nevada 89032	January 9, 2012
5	Non-governmental Organization	Friedman	Sarah	Sierra Club	3435 Wilshire Boulevard, Suite 660, Los Angeles, CA 90010	January 9, 2012
5	Non-governmental Organization	Wald	Johanna	Natural Resources Defense Council	111 Sutter Street, 20th Floor, San Francisco, California 94104	January 9, 2012
6	Non-	Hiatt	John	Red Rock	8180 Placid Street,	January 9,

Letter Number	Respondent Type	Last Name	First Name	Organization	Address	Date Received
	governmental Organization			Audubon Society	Las Vegas, Nevada 89123	2012
7	Government Agency	Manzanilla	Enrique	U.S. Environmental Protection Agency, Region IX	75 Hawthorne Street, San Francisco, California 94105	January 13, 2012
8	Non-governmental Organization	Feldman	Jane	Sierra Club	N/A	December 14, 2011
9	Non-governmental Organization	Spotleson	Vinny	Sierra Club	708 S. 6th Street Las Vegas, Nevada 89101	December 14, 2011
10	Tribe	Simmons	Vicki	Moapa Band of Paiutes	N/A	December 14, 2011

This page intended to be blank.

Appendix M

Public Comment and Agency Correspondence

This page intended to be blank.

Kern River
GAS TRANSMISSION COMPANY
A MIDAMERICAN ENERGY HOLDINGS COMPANY

Kern River Gas Transmission Company
P.O. Box 71400
Salt Lake City, UT 84171-0400

September 13, 2011

Reference:
NVN-0425841
NVN-089176
2800(NVS0056)

Ms. Vanessa Hice
Assistant Field Manager
Division of Lands
Southern Nevada District Office
Bureau of Land Management
4701 N. Torrey Pines Drive
Las Vegas NV 89130

Attn: Mr. Mark Chandler

Dear Ms. Hice:

In response to your letter of September 2, 2011 Kern River Gas Transmission Company (Kern River) wishes to thank you for the notification of the impending realty action and providing the opportunity to comment on the proposal. Kern River also appreciates the briefing by Mr. Mark Chandler, Realty Specialist, and the materials he supplied on specific details of the pending request for authorization to construct, operate, maintain and terminate a generation tie in-line and access road on Federal Lands within the Southern Nevada District Office's jurisdiction in support of the K Road's proposed solar photovoltaic 350-megawatt power plant located on tribal lands within the Moapa Indian Reservation.

After reviewing the maps and speaking with the proponents Kern River offers the following comments as the above referenced company undertakes construction efforts:

1. Based on the documentation provided, the placement of the H-Frame towers does take in consideration Kern River's right of way and avoids any building within the easement for high pressure natural gas lines. Kern River has no problem with construction of these structures as proposed, outside of the pipeline easement and in-so-far as the conductor overhang does not encroach over the easement. If it becomes necessary to move the individual towers Kern River requests the opportunity to be involved with alternate locations to protect our infrastructure.

2. There is a potential for alternating current interference from the proposed power line as it crosses Kern River's pipeline. Kern River reserves the right to back charge for remediation if this proves to be a problem.

3. Kern River notes that the proposed access road appears, from the drawings submitted to BLM, the access road crosses Kern River's looped pipeline. This may cause several potential problems. All potential crossings should cross our pipe at as close to a 90 degree angle as possible. All crossings should be approved by Kern River personnel to assure sufficient padding for line protection. And, that as construction takes place Kern River's on site technician be consulted to ensure that adequate protection for the pipe is maintained.

4. Kern River requests that K Road Moapa Solar LLC utilize "One-call" services prior to any construction activities, including but not limited to: Initial construction development in the area; the placement of towers; equipment movement across our right of way, and as line installation activities take place across Kern River's right of way.

5. Kern River also will have a technician on site as any construction activities occur on the pipeline right of way to protect Kern River assets.

6. A specific encroachment permit is required between K Road Moapa Solar LLC and Kern River Gas Transmission Company to ensure that Kern River's right of way and assets are protected.

Kern River appreciates the opportunity to provide comments on how the proposed project may affect the integrity of our pipeline. We look forward to working with the proponent to reach a successful conclusion of their construction, and in the ongoing operation of their facilities.

Of you have any questions do not hesitate to contact Fran Cherry Sr. Environmental Specialist at 801-937-6133, and locally in our Las Vegas district office Mr. Dave Dahl, District Manager, at 702-639-3601 or Mr. Rick Wooten at 702-639-3604.

Sincerely,

/S/ Fran Cherry

Francis (Fran) Cherry
Sr. Environmental Specialist
Kern River Gas Transmission Co.
801-937-6133
fran.cherry@kernrivergas.com

GREAT BASIN
TRANSMISSION, LLC

September 19, 2011

Bureau of Land Management
ATTN: Mark Chandler
4701 N. Torrey Pines Drive
Las Vegas, NV 89130

RE: NVN-086359, NVN-89176, 2800 (NVS0056)

Dear Mr. Chandler:

I am in receipt of a letter from Ms. Vanessa Hice notifying our firm of a right-of-way ("RoW") application filed for the K Road Moapa Solar, LLC ("K Road") project (NVN-089176). As correctly mentioned in the letter, the K Road project proposes facilities that are near or adjacent to facilities in our application for a 500 kV electrical transmission line. Our project is known as the Southern Nevada Intertie Project ("SNIP") with a BLM case file number of NVN-086359.

The K Road project maps included in Ms. Hice's letter appear to show a transmission alignment from the proposed solar field to the Crystal Substation. Several alternatives near the Crystal Substation are currently being analyzed as a part of our SNIP project. It will be important for the proponents of the K Road project to factor the location of the SNIP alignment into their proposed transmission alignment to avoid conflicting locations and plan for crossings in appropriate locations. Please ensure that the alternatives under review for SNIP are factored into the siting activities of the K Road project.

The enclosed CD-ROM contains a GIS shapefile of the proposed alternatives and current Plan of Development for the SNIP. Great Basin Transmission, LLC is requesting a 200 foot wide right-of-way for the SNIP. An SF-299 RoW application for SNIP was filed with the BLM in December 2008, and the project is currently proceeding through the NEPA process with the development of an Environmental Assessment. Phil Rhinehart is the BLM Reality Specialist leading the efforts for the project in the Las Vegas Field Office

Please feel free to contact me at (636) 532-2200 should you have any questions.

Sincerely,

Luke C. Papez

400 CHESTERFIELD CENTER, SUITE 110 - ST. LOUIS, MO 63017
636.532.2200 OFFICE - 636.532.2250 FAX

This page intended to be blank.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE IN AMERICA

L42 8/18/11

8/19/11

8/24/11

In Reply Refer to:
NVN-061363
NVN-089176
2800 (NVS0056)

AUG 25 2011

NV Power Company
P.O. Box 98910
Las Vegas, NV 89151

Dear Grant Holder:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltatic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW grant NVN-061363. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE IN AMERICA

LAL 8/18/11

8/18/11 8/24/11

In Reply Refer to:
NVN-082385
NVN-089176
2800 (NVS0056)

AUG 25 2011

Holly Energy Partners
311 W. Quay Ave
Artesia, NM 88210

Dear Grant Holder:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltaic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW grant NVN-082385. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE IN AMERICA

LAL 8/18/11

8/24/11

In Reply Refer to:
NVN-057781
NVN-089176
2800 (NVS0056)

AUG 25 2011

Central Telephone dba Centurylink
6700 Via Austi Pkwy
Las Vegas, NV 89119

Dear Grant Holder:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltatic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW grant NVN-057781. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE IN AMERICA

LAL 8/18/11

8/24/11

In Reply Refer to:
NVN-074510
NVN-089176
2800 (NVS0056)

AUG 25 2011

NV Power Company
P.O. Box 98910
Las Vegas, NV 89151

Dear Grant Holder:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltatic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW grant NVN-074510. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE® IN AMERICA

LAL 8/18/11

JHuce 8/24/11

In Reply Refer to:
NVN-0061985
NVN-089176
2800 (NVS0056)

AUG 25 2011

NV Power Company
P.O. Box 98910
Las Vegas, NV 89151

Dear Grant Holder:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltatic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW grant NVN-0067348. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE® IN AMERICA

LAL 8/18/11

8/24/11

In Reply Refer to:
NVN-063151
NVN-089176
2800 (NVS0056)

AUG 25 2011

NV Power Company
P.O. Box 98910
Las Vegas, NV 89151

Dear Grant Holder:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltatic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW grant NVN-063151. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE IN AMERICA

LAL 8/18/11

8/24/11

In Reply Refer to:
NVN-0045565
NVN-089176
2800 (NVS0056)

AUG 25 2011

NV Department of Transportation
1263 S. Stewart St
Carson City, NV 89712

Dear Grant Holder:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltatic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW grant NVN-0045565. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

TAKE PRIDE IN AMERICA

LA L 8/18/11

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

8/19/11 VHeel 8/24/11

In Reply Refer to:
NVCC-0000360
NVN-089176
2800 (NVS0056)

AUG 25 2011

LA & SL RR Co
1416 Dodge St #208
Omaha, NE 68179

Dear Grant Holder:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltaic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW grant NVCC-0000360. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE IN AMERICA

LAL 8/14/11

8/24/11

In Reply Refer to:
NVN-010683
NVN-089176
2800 (NVS0056)

AUG 25 2011

Intermountain Power Project.
P.O. Box 111
Los Angeles, CA 90051

Dear Grant Holder:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltatic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW grant NVN-010683. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE IN AMERICA

LAL 8/18/11

8/19/11
8/24/11

In Reply Refer to:
NVN-062093
NVN-089176
2800 (NVS0056)

AUG 25 2011

FTV Comm C/O Level 3
1025 Eldorado Way
Broomfield, CO 80023

Dear Grant Holder:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltatic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW grant NVN-062093. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE IN AMERICA

LAL 8/18/11

8/19/11
VHice 8/24/11

In Reply Refer to:
NVN-042581
NVN-089176
2800 (NVS0056)

AUG 25 2011

Kern River Gas Transmission Co
P.O. Box 71400
Salt Lake City, UT 84171

Dear Grant Holder:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltaic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW grant NVN-042581. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

TAKE PRIDE IN AMERICA

LAL 8/18/11

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

8/19/11
8/24/11

In Reply Refer to:
NVN-039815
NVN-089176
2800 (NVS0056)

AUG 25 2011

NV Power Company
P.O. Box 98910
Las Vegas, NV 89151

Dear Grant Holder:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltatic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW grant NVN-039815. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

TAKE PRIDE IN AMERICA

LAL 8/18/11

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

8/19/11
8/24/11

In Reply Refer to:
NVN-066240
NVN-089176
2800 (NVS0056)

AUG 25 2011

City of Mesquite
10 E. Mesquite Blvd
Mesquite, NV 89027

Dear Grant Holder:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltaic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW grant NVN-066240. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

TAKE PRIDE IN AMERICA

LAL 8/16/11

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

8/24/11

In Reply Refer to:
NVN-074575
NVN-089176
2800 (NVS0056)

AUG 25 2011

NV Power Company
P.O. Box 98910
Las Vegas, NV 89151

Dear Applicant:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltatic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW application NVN-074575. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

TAKE PRIDE IN AMERICA

LAL 8/18/11

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

8/19/11
VH 8/24/11

In Reply Refer to:
NVN-075196
NVN-089176
2800 (NVS0056)

AUG 25 2011

PBs&J
901 N. Green Valley Pkwy #100
Henderson, NV 89074

Dear Applicant:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltatic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW application NVN-075196. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE IN AMERICA

LAL 8/18/11

8/19/11

8/24/11

In Reply Refer to:
NVN-085612
NVN-089176
2800 (NVS0056)

AUG 25 2011

Cogentrix Solar Services, LLC
9405 Arrowpoint Blvd
Charlotte, NC 28273

Dear Applicant:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltaic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW application NVN-085612. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE IN AMERICA

LAL 8/18/11

In Reply Refer to:
NVN-086359
NVN-089176
2800 (NVS0056)

AUG 25 2011

Great Basin Transmission, LLC
400 Chesterfield Ctr Ste 110
St. Louis, MO 63017

Dear Applicant:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltaic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW application NVN-086359. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE IN AMERICA

LAL 8/18/11

8/19/11
8/24/11

In Reply Refer to:
NVN-088870
NVN-089176
2800 (NVS0056)

AUG 25 2011

Moapa Solar, LLC
11101 W. 120th Ave Ste 400
Broomfield, CO 80021

Dear Applicant:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltatic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to your ROW application NVN-088870. Please submit any comments on how the proposed use affects the integrity of, or your ability to operate your facility, in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE IN AMERICA

LAL 8/18/11

8/24/11

In Reply Refer to:
NVN-089176
2800 (NVS0056)

AUG 25 2011

Desert Conservation Program
333 North Rancho, Suite 625
Las Vegas, NV 89106

Dear Desert Conservation Program:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltatic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to Federal lands that concern your interests. Please submit any comments on how the proposed use affects the integrity of your interest in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

TAKE PRIDE IN AMERICA

In Reply Refer to:
NVN-089176
2800 (NVS0056)

AUG 25 2011

Deborah MacNeill
4430 Grissom Ave, Suite 101
Nellis AFB, NV 89191

Dear Deborah MacNeill:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltaic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to Federal lands that concern your interests. Please submit any comments on how the proposed use affects the integrity of your interest in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

United States Department of the Interior

TAKE PRIDE IN AMERICA

LAL 8/18/11

BUREAU OF LAND MANAGEMENT
Southern Nevada District
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
http://www.blm.gov/nv/st/en/fo/lvfo.1.html

8/19/11
8/24/11

In Reply Refer to:
NVN-089176
2800 (NVS0056)

AUG 25 2011

Moapa Valley Community Center
320 North Moapa Valley Boulevar
Overton, NV 89040

Dear Moapa Valley Community Center:

On September 15, 2010, K Road Moapa Solar, LLC (K Road) filed a right-of-way (ROW) application (NVN-089176) requesting authorization to construct, operate, maintain, and terminate a generation tie in-line and access road in accordance with Title V of the Federal Land Policy Management Act of October 21, 1976. This ROW application supports K Road's proposed solar photovoltatic 350-megawatt power plant, which is located on tribal lands within the Moapa River Indian Reservation in Clark County, Nevada. Two maps that were submitted with the application are attached for your review. Additional information is contained in case file NVN-089176, which is available at the Bureau of Land Management (BLM), Las Vegas Field Office located at the address above. The proposed project is located on the following lands that are managed by BLM:

Mount Diablo Meridian, Nevada

T. 16 S., R. 64 E.,
sec. 13, lot 9, 11, 14;
sec. 14, lot 15, 16, NE¼SE¼, NW¼SE¼, SW¼SE¼, SE¼SW¼;
sec. 22, lot 15, NE¼SE¼, NW¼SE¼, SW¼SE¼;
sec. 23, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 27, lot 4, 5, 12, NE¼NW¼, NW¼NW¼, NW¼SW¼;
sec. 28, NE¼SE¼, SE¼SE¼;
sec. 33, NE¼NE¼, SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.
T. 17 S., R. 64 E.,
sec. 10, lot 7, SE¼NW¼, NE¼SW¼, SW¼SW¼, SE¼SW¼;
sec. 15, NE¼NW¼, NW¼NW¼, SW¼NW¼;
sec. 16, SE¼NE¼, NE¼SW¼.

As required by 43 CFR 2807.14, we are notifying you of this application, as it is subject to, near or adjacent to Federal lands that concern your interests. Please submit any comments on how the proposed use affects the integrity of your interest in writing within 15 days of receipt of this notification. If we do not receive any response from you, we will assume that you have no problem or special issues with the granting of this ROW. Correspondence should be addressed to Bureau of Land Management, Attn: Mr. Mark Chandler, 4701 N. Torrey Pines Drive, Las Vegas, Nevada 89130.

If you have any questions, please contact Mr. Mark Chandler, RECO Realty Specialist, at (702) 515-5064.

Sincerely,

Vanessa L. Hice
Assistant Field Manager
Division of Lands

Enclosure(s)

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

Appendix N

Environmental Hazardous Radius Report

This page intended to be blank.

GeoSearch

On time. On target. In touch.™

Radius Report

http://www.geo-search.net/QuickMap/index.htm?DataID=Standard0000034438

Click on link above to access the map and satellite view of current property

Target Property:

K Road Moapa Solar Project
LAS VEGAS, Clark County, Nevada 89040

Prepared For:

Arcadis - Austin

Order #: 14723
Job #: 34438
Date: 10/12/2011

3006 Bee Caves Rd, Suite A-230 · Austin, Texas 78746 · phone: 888-396-0042 · fax: 512-472-9967 · www.geo-search.net

This page intended to be blank.

TARGET PROPERTY SUMMARY

K Road Moapa Solar Project
LAS VEGAS, Clark County, Nevada 89040

USGS Quadrangle: ***Arrow Canyon Se, NV***
Target Property Geometry: ***Area***

Target Property Longitude(s)/Latitude(s):
(-114.777061, 36.537613), (-114.775581, 36.538621), (-114.758764, 36.538326), (-114.735775, 36.537919), (-114.746476, 36.520301), (-114.751931, 36.511317), (-114.766576, 36.511544), (-114.772746, 36.520516), (-114.777240, 36.527052), (-114.777061, 36.537613)

County/Parish Covered:
Clark (NV)

Zipcode(s) Covered:
Overton NV: 89040

State(s) Covered:
NV

****Target property is located in Radon Zone 3.***
Zone 3 areas have a predicted average indoor radon screening level less than 2 pCi/L (picocuries per liter).

Disclaimer - The information provided in this report was obtained from a variety of public sources. GeoSearch cannot ensure and makes no warranty or representation as to the accuracy, reliability, quality, errors occurring from data conversion or the customer's interpretation of this report. This report was made by GeoSearch for exclusive use by its clients only. Therefore, this report may not contain sufficient information for other purposes or parties. GeoSearch and its partners, employees, officers And independent contractors cannot be held liable For actual, incidental, consequential, special or exemplary damages suffered by a customer resulting directly or indirectly from any information provided by GeoSearch.

DATABASE FINDINGS SUMMARY

DATABASE	ACRONYM	LOCA-TABLE	UNLOCA-TABLE	SEARCH RADIUS (miles)
FEDERAL				
AEROMETRIC INFORMATION RETRIEVAL SYSTEM / AIR FACILITY SUBSYSTEM	AIRSAFS	0	0	Target Property
BIENNIAL REPORTING SYSTEM	BRS	0	0	Target Property
CLANDESTINE DRUG LABORATORY LOCATIONS	CDL	0	0	Target Property
EPA DOCKET DATA	DOCKETS	0	0	Target Property
FEDERAL ENGINEERING INSTITUTIONAL CONTROL SITES	EC	0	0	Target Property
EMERGENCY RESPONSE NOTIFICATION SYSTEM	ERNSNV	0	0	Target Property
FACILITY REGISTRY SYSTEM	FRSNV	0	0	Target Property
HAZARDOUS MATERIALS INCIDENT REPORTING SYSTEM	HMIRSR09	0	0	Target Property
INTEGRATED COMPLIANCE INFORMATION SYSTEM (FORMERLY DOCKETS)	ICIS	0	0	Target Property
INTEGRATED COMPLIANCE INFORMATION SYSTEM NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	ICISNPDES	0	0	Target Property
MATERIAL LICENSING TRACKING SYSTEM	MLTS	0	0	Target Property
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	NPDESR09	0	0	Target Property
PCB ACTIVITY DATABASE SYSTEM	PADS	0	0	Target Property
PERMIT COMPLIANCE SYSTEM	PCSR09	0	0	Target Property
CERCLIS LIENS	SFLIENS	0	0	Target Property
SECTION SEVEN TRACKING SYSTEM	SSTS	0	0	Target Property
TOXICS RELEASE INVENTORY	TRI	0	0	Target Property
TOXIC SUBSTANCE CONTROL ACT INVENTORY	TSCA	0	0	Target Property
NO LONGER REGULATED RCRA GENERATOR FACILITIES	NLRRCRAG	0	0	Target Property and Adjoining
RESOURCE CONSERVATION & RECOVERY ACT - GENERATOR FACILITIES	RCRAGR09	0	0	Target Property and Adjoining
BROWNFIELDS MANAGEMENT SYSTEM	BF	0	0	0.5000
COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION & LIABILITY INFORMATION SYSTEM	CERCLIS	0	0	0.5000
LAND USE CONTROL INFORMATION SYSTEM	LUCIS	0	0	0.5000
NO FURTHER REMEDIAL ACTION PLANNED SITES	NFRAP	0	0	0.5000

DATABASE FINDINGS SUMMARY

DATABASE	ACRONYM	LOCA-TABLE	UNLOCA-TABLE	SEARCH RADIUS (miles)
NO LONGER REGULATED RCRA NON-CORRACTS TSD FACILITIES	NLRRCRAT	0	0	0.5000
OPEN DUMP INVENTORY	ODI	0	0	0.5000
RESOURCE CONSERVATION & RECOVERY ACT - TREATMENT, STORAGE & DISPOSAL FACILITIES	RCRAT	0	0	0.5000
DELISTED NATIONAL PRIORITIES LIST	DNPL	0	0	1.0000
DEPARTMENT OF DEFENSE SITES	DOD	0	0	1.0000
FORMERLY USED DEFENSE SITES	FUDS	0	0	1.0000
NO LONGER REGULATED RCRA CORRECTIVE ACTION FACILITIES	NLRRCRAC	0	0	1.0000
NATIONAL PRIORITIES LIST	NPL	0	0	1.0000
PROPOSED NATIONAL PRIORITIES LIST	PNPL	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - CORRECTIVE ACTION FACILITIES	RCRAC	0	0	1.0000
RECORD OF DECISION SYSTEM	RODS	0	0	1.0000
SUB-TOTAL		**0**	**0**	
STATE (NV)				
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMITS	NPDES	0	0	Target Property
SPILLS LISTING	SPILLS	0	0	Target Property
ABOVEGROUND STORAGE TANKS	AST	0	0	0.2500
REGISTERED UNDERGROUND STORAGE TANKS	UST	0	1	0.2500
BROWNFIELD PROPERTIES	BF	0	0	0.5000
HAZARDOUS WASTE RECYCLING FACILITIES	HWRECYCLERS	0	0	0.5000
LEAKING UNDERGROUND STORAGE TANKS	LUST	0	2	0.5000
RECYCLING FACILITIES	RECYCLERS	0	0	0.5000
SOLID WASTE FACILITIES	SWF	0	0	0.5000
TIER I I FACILITY LISTING	TIERII	0	0	0.5000
VOLUNTARY CLEANUP PROGRAM SITES	VCP	0	0	0.5000

DATABASE FINDINGS SUMMARY

DATABASE	ACRONYM	LOCA-TABLE	UNLOCA-TABLE	SEARCH RADIUS (miles)
SUB-TOTAL		**0**	**3**	
LOCAL				
CLARK COUNTY SOLID WASTE LANDFILLS	CCSWLF	0	0	0.5000
SUB-TOTAL		**0**	**0**	
TRIBAL				
UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	USTR09	0	0	0.2500
LEAKING UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	LUSTR09	0	0	0.5000
OPEN DUMP INVENTORY ON TRIBAL LANDS	ODINDIAN	0	0	0.5000
INDIAN RESERVATIONS	INDIANRES	1	0	1.0000
SUB-TOTAL		**1**	**0**	
TOTAL		**1**	**3**	

LOCATABLE DATABASE FINDINGS

ACRONYM	Target Property	SEARCH RADIUS (miles)	1/8 Mile (> TP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
FEDERAL								
AIRSAFS		.0200	0	0	0	0	NS	0
BRS		.0200	0	0	0	0	NS	0
CDL		.0200	0	0	0	0	NS	0
DOCKETS		.0200	0	0	0	0	NS	0
EC		.0200	0	0	0	0	NS	0
ERNSNV		.0200	0	0	0	0	NS	0
FRSNV		.0200	0	0	0	0	NS	0
HMIRSR09		.0200	0	0	0	0	NS	0
ICIS		.0200	0	0	0	0	NS	0
ICISNPDES		.0200	0	0	0	0	NS	0
MLTS		.0200	0	0	0	0	NS	0
NPDESR09		.0200	0	0	0	0	NS	0
PADS		.0200	0	0	0	0	NS	0
PCSR09		.0200	0	0	0	0	NS	0
SFLIENS		.0200	0	0	0	0	NS	0
SSTS		.0200	0	0	0	0	NS	0
TRI		.0200	0	0	0	0	NS	0
TSCA		.0200	0	0	0	0	NS	0
NLRRCRAG		.1250	0	0	0	0	NS	0
RCRAGR09		.1250	0	0	0	0	NS	0
BF		.5000	0	0	0	0	NS	0
CERCLIS		.5000	0	0	0	0	NS	0
LUCIS		.5000	0	0	0	0	NS	0
NFRAP		.5000	0	0	0	0	NS	0
NLRRCRAT		.5000	0	0	0	0	NS	0
ODI		.5000	0	0	0	0	NS	0
RCRAT		.5000	0	0	0	0	NS	0

LOCATABLE DATABASE FINDINGS

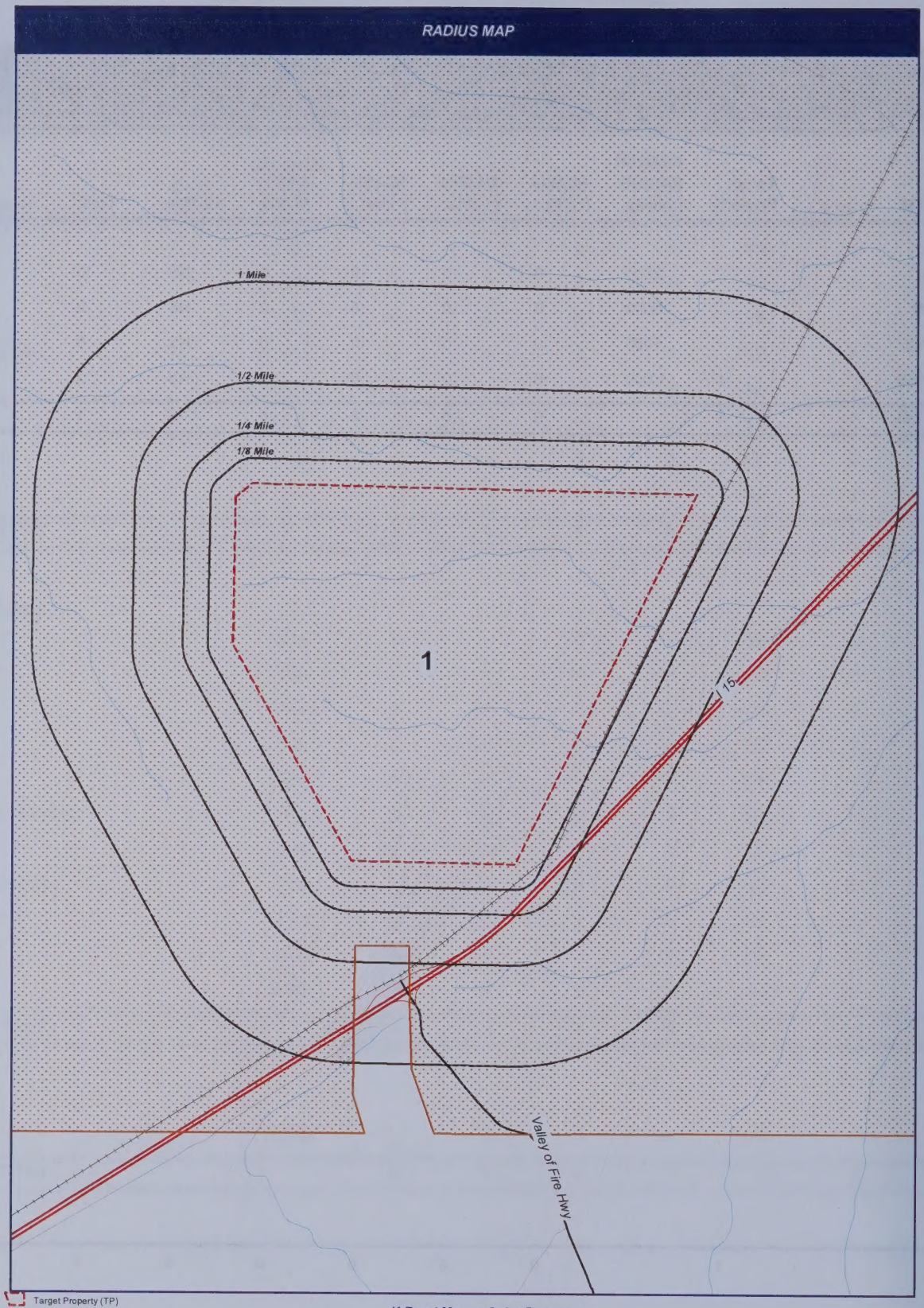
ACRONYM	Target Property	SEARCH RADIUS (miles)	1/8 Mile (> TP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
DNPL		1.000	0	0	0	0	NS	0
DOD		1.000	0	0	0	0	NS	0
FUDS		1.000	0	0	0	0	NS	0
NLRRCRAC		1.000	0	0	0	0	NS	0
NPL		1.000	0	0	0	0	NS	0
PNPL		1.000	0	0	0	0	NS	0
RCRAC		1.000	0	0	0	0	NS	0
RODS		1.000	0	0	0	0	NS	0
SUB-TOTAL			**0**	**0**	**0**	**0**	**0**	**0**
STATE (NV)								
NPDES		.0200	0	0	0	0	NS	0
SPILLS		.0200	0	0	0	0	NS	0
AST		.2500	0	0	0	0	NS	0
UST		.2500	0	0	0	0	NS	0
BF		.5000	0	0	0	0	NS	0
HWRECYCLERS		.5000	0	0	0	0	NS	0
LUST		.5000	0	0	0	0	NS	0
RECYCLERS		.5000	0	0	0	0	NS	0
SWF		.5000	0	0	0	0	NS	0
TIERII		.5000	0	0	0	0	NS	0
VCP		.5000	0	0	0	0	NS	0
SUB-TOTAL			**0**	**0**	**0**	**0**	**0**	**0**
LOCAL								
CCSWLF		.5000	0	0	0	0	NS	0
SUB-TOTAL			**0**	**0**	**0**	**0**	**0**	**0**

LOCATABLE DATABASE FINDINGS

ACRONYM	Target Property	SEARCH RADIUS (miles)	1/8 Mile (> TP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
TRIBAL								
USTR09		.2500	0	0	0	0	NS	0
LUSTR09		.5000	0	0	0	0	NS	0
ODINDIAN		.5000	0	0	0	0	NS	0
INDIANRES	1	1.000	0	0	0	0	NS	1
SUB-TOTAL	**1**		**0**	**0**	**0**	**0**	**0**	**1**
TOTAL	**1**		**0**	**0**	**0**	**0**	**0**	**1**

NOTES:
NS = NO SEARCH REQUESTED BY CUSTOMER

RADIUS MAP



K Road Moapa Solar Project
LAS VEGAS, Nevada
89040

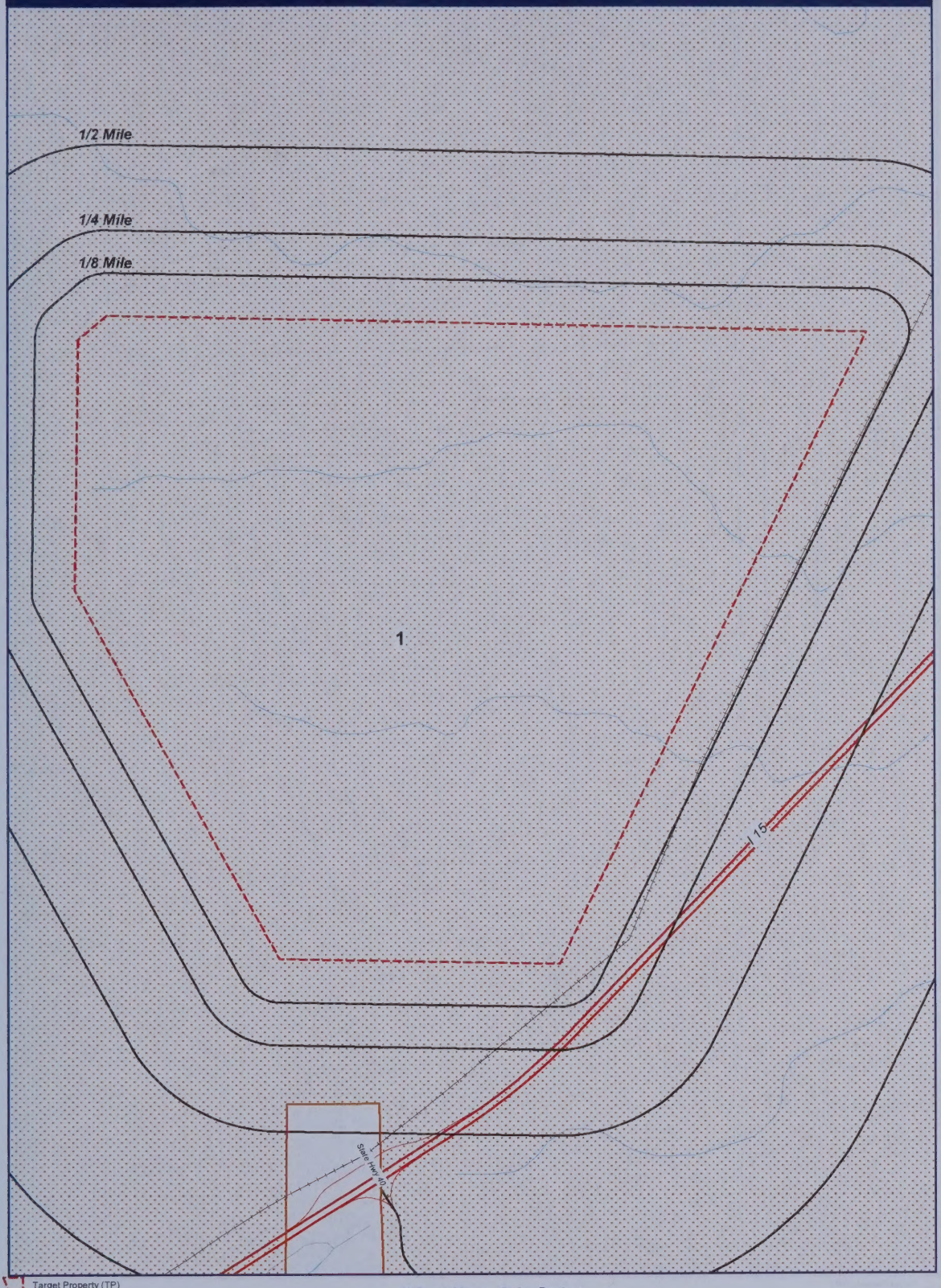
N
W E
S

0' 1250' 2500' 3750'
SCALE 1" = 2500'

GeoSearch www.geo-search.net - phone: 866-396-0042 - fax: 512-472-9967

JOB #: 34438 - 10/12/2011

RADIUS MAP



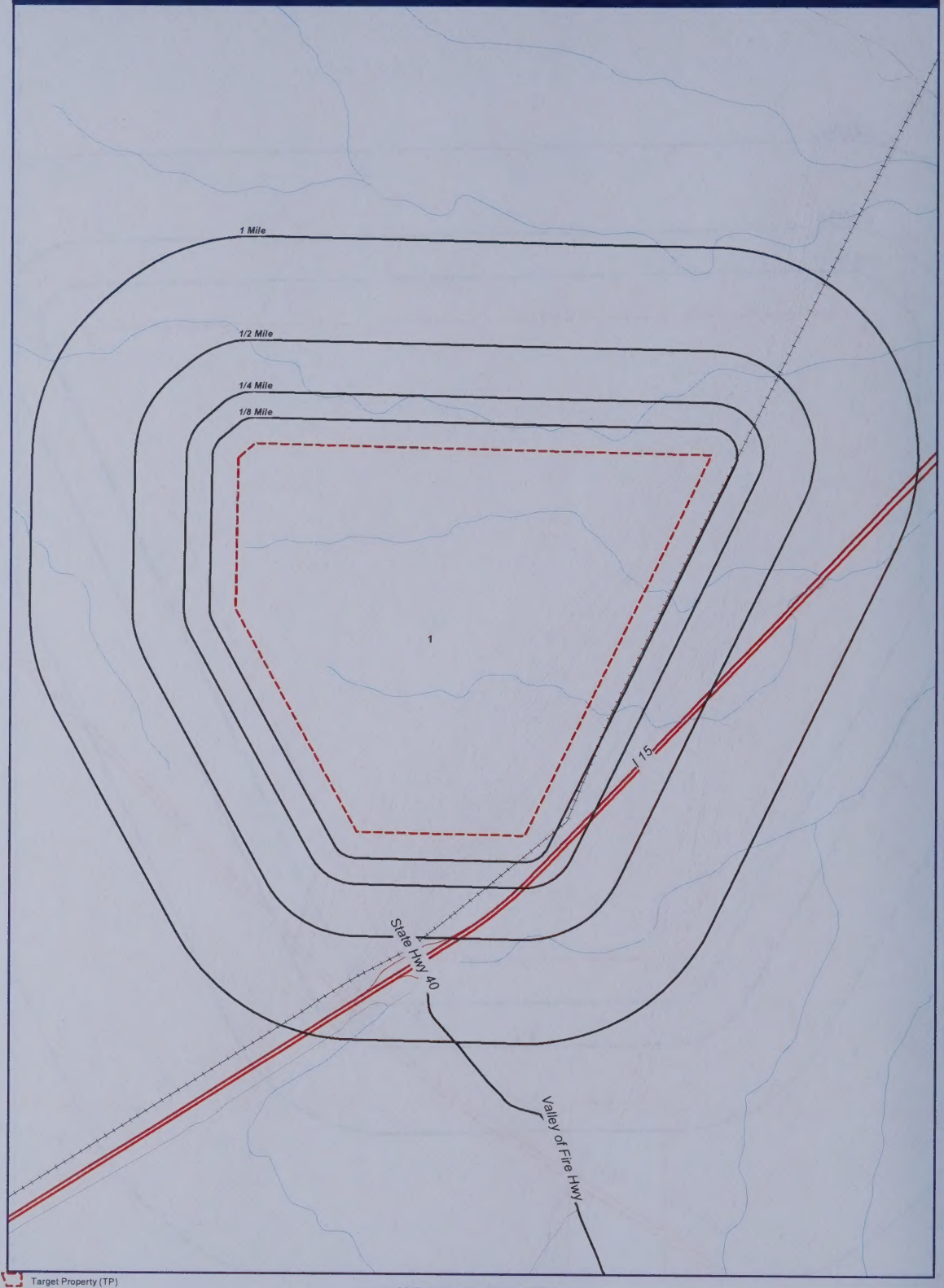
Target Property (TP)

K Road Moapa Solar Project
LAS VEGAS, Nevada
89040

N
W E
S

0' 750' 1500' 2250'
SCALE 1" = 1500'

RADIUS MAP



Target Property (TP)

K Road Moapa Solar Project
LAS VEGAS, Nevada
89040

N
W E
S

0' 1250' 2500' 3750'
SCALE: 1" = 2500'

ORTHOPHOTO MAP

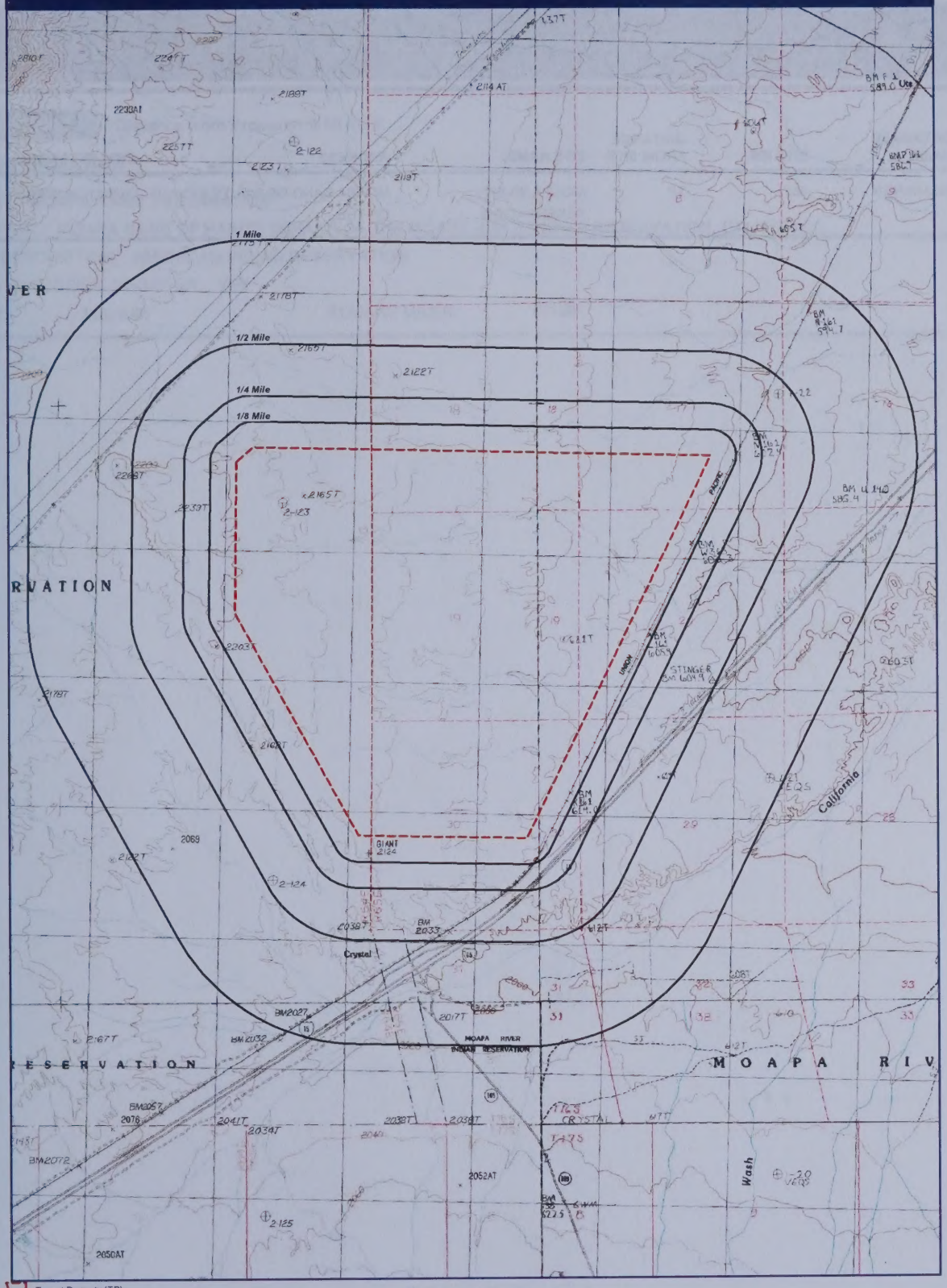
Target Property (TP)

Quadrangle(s): Arrow Canyon Se, Ute
Source: USGS (1994 06 0)
K Road Moapa Solar Project
LAS VEGAS, Nevada
89040

N
W E
S

0' 750' 1500' 2250'
SCALE 1" = 1500'

TOPOGRAPHIC MAP



REPORT SUMMARY OF LOCATABLE SITES

MAP ID#	DATABASE NAME	SITE ID#	DISTANCE FROM SITE	SITE NAME	ADDRESS	CITY, ZIP CODE	PAGE #
1	INDIANRES	487	TP	MOAPA RIVER RESERVATION	MOAPA BAND OF PAIUTE INDIANS OF THE	OVERTON, 89040	1

INDIAN RESERVATIONS (INDIANRES)

MAP ID# 1 **Distance from Property: 0.00 mi. X**

SITE INFORMATION

ENTITY: **MOAPA RIVER RESERVATION**

OCCUPANT: **MOAPA BAND OF PAIUTE INDIANS OF THE MOAPA RIVER INDIAN RESERVATION, CALIFORNIA**

AIANA DESCRIPTION: **AMERICAN INDIAN RESERVATION**

ENTITY IN FEDERAL REGISTER: **YES**

ACRES: **71675.04** SQUARE MILES: **111.99**

REPORT SUMMARY OF UNLOCATABLE SITES

DATABASE TYPE	SITE ID#	SITE NAME	ADDRESS	CITY	ZIP CODE
LUST	H-001278	BEKINS VAN LINES	INTERSTATE 15		
LUST	H-001295	WERNER ENTERPRISES MOBILE SOURCE	INTERSTATE 15		
UST	8-000050	MORMON MESA RADIO RELAY	I-15	OVERTON	89040

LEAKING UNDERGROUND STORAGE TANKS (LUST)

FACILITY INFORMATION

FACILITY ID: **H-001278**
FACILITY NAME: **BEKINS VAN LINES**
ADDRESS: **INTERSTATE 15**
NV

FACILITY DETAILS

REPORT DATE: **05/07/1998**
CLOSE DATE: **06/07/1998**
CLOSE TYPE: **CLEAN CLOSE**
PROGRAM: **NOT REPORTED**
OFFICER: **SPIPER**
MEDIA: **NOT REPORTED**
EVENT: **NOT REPORTED**
STATUS: **CLOSED**
CONTAMINANT: **DIESEL**

ABOUT 25 GALLONS FROM SADDLE TANK

LEAKING UNDERGROUND STORAGE TANKS (LUST)

FACILITY INFORMATION

FACILITY ID: **H-001295**
FACILITY NAME: **WERNER ENTERPRISES MOBILE SOURCE**
ADDRESS: **INTERSTATE 15**
NV

FACILITY DETAILS

REPORT DATE: **09/03/1997**
CLOSE DATE: **11/24/1997**
CLOSE TYPE: **OTHER**
PROGRAM: **NOT REPORTED**
OFFICER: **ARUSHANA**
MEDIA: **SURFACE WATER**
EVENT: **NOT REPORTED**
STATUS: **CLOSED**
CONTAMINANT: **DIESEL**

SPILL DURING RAIN - DOWN STORM DRAIN

REGISTERED UNDERGROUND STORAGE TANKS (UST)

FACILITY INFORMATION

FACILITY ID: **8-000050**
FACILITY NAME: **MORMON MESA RADIO RELAY**
ADDRESS: **I-15**
OVERTON NV 89040

OWNER INFORMATION

OWNER NAME: **AT&T COMMUNICATIONS**
OWNER ADDRESS: **308 S. AKARD ST. ROOM: 1700**
DALLAS TX 75202
OWNER PHONE: **(214) 464-1469**
OWNER DESCRIPTION: **COMMERCIAL**

TANK INFORMATION

TANK ID: **1**
STATUS: **PERMANENTLY OUT OF USE**
CAPACITY: **3000**
SUBSTANCE: **DIESEL**
INSALLATION DATE: **01/01/62**
FEDERALLY REGULATED: **T**

TANK MATERIAL: **ASPHALT COATED OR BARE STEEL**
TANK MODIFICATION: **NONE**
PIPE MATERIAL: **GALVANIZED STEEL**
PIPE MODIFICATION: **NONE**

ENVIRONMENTAL RECORDS DEFINITIONS - FEDERAL

AIRSAFS Aerometric Information Retrieval System / Air Facility Subsystem

VERSION DATE: 3/2010

The United States Environmental Protection Agency (EPA) modified the Aerometric Information Retrieval System (AIRS) to a database that exclusively tracks the compliance of stationary sources of air pollution with EPA regulations: the Air Facility Subsystem (AFS). Since this change in 2001, the management of the AIRS/AFS database was assigned to EPA's Office of Enforcement and Compliance Assurance.

BF Brownfields Management System

VERSION DATE: 8/2011

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. The United States Environmental Protection Agency maintains this database to track activities in the various brown field grant programs including grantee assessment, site cleanup and site redevelopment.

BRS Biennial Reporting System

VERSION DATE: 1/2003

The United States Environmental Protection Agency (EPA), in cooperation with the States, biennially collects information regarding the generation, management, and final disposition of hazardous wastes regulated under the Resource Conservation and Recovery Act of 1976 (RCRA), as amended. The Biennial Report captures detailed data on the generation of hazardous waste from large quantity generators and data on waste management practices from treatment, storage and disposal facilities. Currently, the EPA states that data collected between 1991 and 1997 was originally a part of the defunct Biennial Reporting System and is now incorporated into the RCRAInfo data system.

CDL Clandestine Drug Laboratory Locations

VERSION DATE: 5/2011

The U.S. Department of Justice ("the Department") provides this information as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments. The Department does not establish, implement, enforce, or certify compliance with clean-up or remediation standards for contaminated sites; the public should contact a state or local health department or environmental protection agency for that information.

ENVIRONMENTAL RECORDS DEFINITIONS - FEDERAL

CERCLIS Comprehensive Environmental Response, Compensation & Liability Information System

VERSION DATE: 6/2011

CERCLIS is the repository for site and non-site specific Superfund information in support of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). This United States Environmental Protection Agency database contains an extract of sites that have been investigated or are in the process of being investigated for potential environmental risk.

DNPL Delisted National Priorities List

VERSION DATE: 6/2011

This database includes sites from the United States Environmental Protection Agency's Final National Priorties List (NPL) where remedies have proven to be satisfactory or sites where the original analyses were inaccurate, and the site is no longer appropriate for inclusion on the NPL, and final publication in the Federal Register has occurred.

DOCKETS EPA Docket Data

VERSION DATE: 12/2005

The United States Environmental Protection Agency Docket data lists Civil Case Defendants, filing dates as far back as 1971, laws broken including section, violations that occurred, pollutants involved, penalties assessed and superfund awards by facility and location. Please refer to ICIS database as source of current data.

DOD Department of Defense Sites

VERSION DATE: 12/2005

This information originates from the National Atlas of the United States Federal Lands data, which includes lands owned or administered by the Federal government. Army DOD, Army Corps of Engineers DOD, Air Force DOD, Navy DOD and Marine DOD areas of 640 acres or more are included.

EC Federal Engineering Institutional Control Sites

VERSION DATE: 5/2011

This database includes site locations where Engineering and/or Institutional Controls have been identified as part of a selected remedy for the site as defined by United States Environmental Protection Agency official remedy decision documents. A site listing does not indicate that the institutional and engineering controls are currently in place nor will be in place once the remedy is complete; it only indicates that the decision to include either of them in the remedy is documented as of the completed date of the document. Institutional controls are actions, such as legal controls, that help minimize the potential for human exposure to contamination by ensuring appropriate land or resource use. Engineering controls include caps, barriers, or other device engineering to prevent access, exposure, or continued migration of contamination.

ERNSNV Emergency Response Notification System

VERSION DATE: 12/2010

This National Response Center database contains data on reported releases of oil, chemical, radiological, biological, and/or etiological discharges into the environment anywhere in the United States and its territories. The data comes from spill reports made to the U.S. Environmental Protection Agency, U.S. Coast Guard, the National Response Center and/or the U.S. Department of Transportation.

FRSNV Facility Registry System

VERSION DATE: 6/2011

The United States Environmental Protection Agency's Office of Environmental Information (OEI) developed the Facility Registry System (FRS) as the centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest. The Facility Registry System replaced the Facility Index System or FINDS database.

FUDS Formerly Used Defense Sites

VERSION DATE: 8/2010

The 2009 FUDS inventory includes properties previously owned by or leased to the United States and under Secretary of Defense jurisdiction. The remediation of these properties is the responsibility of the Department of Defense.

HMIRSR09 Hazardous Materials Incident Reporting System

VERSION DATE: 5/2011

The HMIRS database contains unintentional hazardous materials release information reported to the U.S. Department of Transportation located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

ICIS Integrated Compliance Information System (formerly DOCKETS)

VERSION DATE: 3/2010

ICIS is a case activity tracking and management system for civil, judicial, and administrative federal Environmental Protection Agency enforcement cases. ICIS contains information on federal administrative and federal judicial cases under the following environmental statutes: the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, the Emergency Planning and Community Right-to-Know Act - Section 313, the Toxic Substances Control Act, the Federal Insecticide, Fungicide, and Rodenticide Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Safe Drinking Water Act, and the Marine Protection, Research, and Sanctuaries Act.

ICISNPDES Integrated Compliance Information System National Pollutant Discharge Elimination System

VERSION DATE: 3/2010

In 2006, the Integrated Compliance Information System (ICIS) - National Pollutant Discharge Elimination System (NPDES) became the NPDES national system of record for select states, tribes and territories. ICIS-NPDES is an information management system maintained by the United States Environmental Protection Agency's Office of Compliance to track permit compliance and enforcement status of facilities regulated by the NPDES under the Clean Water Act. ICIS-NPDES is designed to support the NPDES program at the state, regional, and national levels.

LUCIS Land Use Control Information System

VERSION DATE: 9/2006

The LUCIS database is maintained by the U.S. Navy and contains information for former Base Realignment and Closure (BRAC) properties across the United States.

MLTS Material Licensing Tracking System

VERSION DATE: 2/2011

MLTS is a list of approximately 8,100 sites which have or use radioactive materials subject to the United States Nuclear Regulatory Commission (NRC) licensing requirements.

NFRAP No Further Remedial Action Planned Sites

VERSION DATE: 6/2011

This database includes sites which have been determined by the United States Environmental Protection Agency, following preliminary assessment, to no longer pose a significant risk or require further activity under CERCLA. After initial investigation, no contamination was found, contamination was quickly removed or contamination was not serious enough to require Federal Superfund action or NPL consideration.

NLRRCRAC No Longer Regulated RCRA Corrective Action Facilities

VERSION DATE: 7/2011

This database includes RCRA Corrective Action facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements.

NLRRCRAG No Longer Regulated RCRA Generator Facilities

VERSION DATE: 7/2011

This database includes RCRA Generator facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements. This listing includes facilities that formerly generated hazardous waste.

Large Quantity Generators: Generate 1,000 kg or more of hazardous waste during any calendar month; or Generate more than 1 kg of acutely hazardous waste during any calendar month; or Generate more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste during any calendar month; or Generate 1 kg or less of acutely hazardous waste during any calendar month, and accumulate more than 1kg of acutely hazardous waste at any time; or Generate 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulated more than 100 kg of that material at any time.
Small Quantity Generators: Generate more than 100 and less than 1000 kilograms of hazardous waste during any calendar month and accumulate less than 6000 kg of hazardous waste at any time; or Generate 100 kg or less of hazardous waste during any calendar month, and accumulate more than 1000 kg of hazardous waste at any time.
Conditionally Exempt Small Quantity Generators: Generate 100 kilograms or less of hazardous waste per calendar month, and accumulate 1000 kg or less of hazardous waste at any time; or Generate one kilogram or less of acutely hazardous waste per calendar month, and accumulate at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste; or Generate 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste during any calendar month, and accumulate at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste.

NLRRCRAT No Longer Regulated RCRA Non-CORRACTS TSD Facilities

VERSION DATE: 7/2011

This database includes RCRA Non-Corrective Action TSD facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements. This listing includes facilities that formerly treated, stored or disposed of hazardous waste.

NPDESR09 National Pollutant Discharge Elimination System

VERSION DATE: 4/2007

Information in this database is extracted from the Water Permit Compliance System (PCS) database which is used by United States Environmental Protection Agency to track surface water permits issued under the Clean Water Act. This database includes permitted facilities located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa. The NPDES database was collected from December 2002 until April 2007. Refer to the PCS and/or ICIS-NPDES database as source of current data.

NPL National Priorities List

VERSION DATE: 6/2011

This database includes United States Environmental Protection Agency (EPA) National Priorities List sites that fall under the EPA's Superfund program, established to fund the cleanup of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action.

ODI Open Dump Inventory

VERSION DATE: 6/1985

The open dump inventory was published by the United States Environmental Protection Agency. An "open dump" is defined as a facility or site where solid waste is disposed of which is not a sanitary landfill which meets the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944) and which is not a facility for disposal of hazardous waste. This inventory has not been updated since June 1985.

PADS PCB Activity Database System

VERSION DATE: 11/2010

The PCB Activity Database System (PADS) is used by the United States Environmental Protection Agency to monitor the activities of polychlorinated biphenyls (PCB) handlers.

PCSR09 Permit Compliance System

VERSION DATE: 3/2010

The Permit Compliance System is used in tracking enforcement status and permit compliance of facilities controlled by the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act and is maintained by the United States Environmental Protection Agency's Office of Compliance. PCS is designed to support the NPDES program at the state, regional, and national levels. This database includes permitted facilities located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

PNPL Proposed National Priorities List

VERSION DATE: 6/2011

This database contains sites proposed to be included on the National Priorities List (NPL) in the Federal Register. The United States Environmental Protection Agency investigates these sites to determine if they may present long-term threats to public health or the environment.

RCRAC Resource Conservation & Recovery Act - Corrective Action Facilities

VERSION DATE: 7/2011

This database includes hazardous waste sites listed with corrective action activity in the RCRAInfo system. The Corrective Action Program requires owners or operators of RCRA facilities (or treatment, storage, and disposal facilities) to investigate and cleanup contamination in order to protect human health and the environment. The United States Environmental Protection Agency defines RCRAInfo as the comprehensive information system which provides access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS).

RCRAGR09 Resource Conservation & Recovery Act - Generator Facilities

VERSION DATE: 7/2011

This database includes sites listed as generators of hazardous waste (large, small, and exempt) in the RCRAInfo system. The United States Environmental Protection Agency defines RCRAInfo as the comprehensive information system which provides access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). This database includes sites located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.
Large Quantity Generators: Generate 1,000 kg or more of hazardous waste during any calendar month; or Generate more than 1 kg of acutely hazardous waste during any calendar month; or Generate more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste during any calendar month; or Generate 1 kg or less of acutely hazardous waste during any calendar month, and accumulate more than 1kg of acutely hazardous waste at any time; or Generate 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulated more than 100 kg of that material at any time.
Small Quantity Generators: Generate more than 100 and less than 1000 kilograms of hazardous waste during any calendar month and accumulate less than 6000 kg of hazardous waste at any time; or Generate 100 kg or less of hazardous waste during any calendar month, and accumulate more than 1000 kg of hazardous waste at any time.
Conditionally Exempt Small Quantity Generators: Generate 100 kilograms or less of hazardous waste per calendar month, and accumulate 1000 kg or less of hazardous waste at any time; or Generate one kilogram or less of acutely hazardous waste per calendar month, and accumulate at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste; or Generate 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous

waste during any calendar month, and accumulate at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste.

RCRAT Resource Conservation & Recovery Act - Treatment, Storage & Disposal Facilities

VERSION DATE: 7/2011

This database includes Non-Corrective Action sites listed as treatment, storage and/or disposal facilities of hazardous waste in the RCRAInfo system. The United States Environmental Protection Agency defines RCRAInfo as the comprehensive information system which provides access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS).

RODS Record of Decision System

VERSION DATE: 9/2011

These decision documents maintained by the United States Environmental Protection Agency describe the chosen remedy for NPL (Superfund) site remediation. They also include site history, site description, site characteristics, community participation, enforcement activities, past and present activities, contaminated media, the contaminants present, and scope and role of response action.

SFLIENS CERCLIS Liens

VERSION DATE: 8/2011

A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which United States Environmental Protection Agency has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties. This database contains those CERCLIS sites where the Lien on Property action is complete.

SSTS Section Seven Tracking System

VERSION DATE: 12/2009

The United States Environmental Protection Agency tracks information on pesticide establishments through the Section Seven Tracking System (SSTS). SSTS records the registration of new establishments and records pesticide production at each establishment. The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) requires that production of pesticides or devices be conducted in a registered pesticide-producing or device-producing establishment. ("Production" includes formulation, packaging, repackaging, and relabeling.)

TRI Toxics Release Inventory

VERSION DATE: 12/2009

The Toxics Release Inventory, provided by the United States Environmental Protection Agency, includes data on toxic chemical releases and waste management activities from certain industries as well as federal facilities. This inventory contains information about the types and amounts of toxic chemicals that are released each year to the air, water, and land as well as information on the quantities of toxic chemicals sent to other facilities for further waste management.

TSCA Toxic Substance Control Act Inventory

VERSION DATE: 12/2006

The Toxic Substances Control Act (TSCA) was enacted in 1976 to ensure that chemicals manufactured, imported, processed, or distributed in commerce, or used or disposed of in the United States do not pose any unreasonable risks to human health or the environment. TSCA section 8(b) provides the United States Environmental Protection Agency authority to "compile, keep current, and publish a list of each chemical substance that is manufactured or processed in the United States." This TSCA Chemical Substance Inventory contains non-confidential information on the production amount of toxic chemicals from each manufacturer and importer site.

ENVIRONMENTAL RECORDS DEFINITIONS - STATE (NV)

AST Aboveground Storage Tanks

VERSION DATE: 6/2008

This listing of aboveground storage tanks was provided by the Nevada State Emergency Response Commission (SERC). In January of 2009, the SERC discontinued the sharing of facility specific information due to the U.S. Environmental Protection Agency's Office of General Counsel and a Nevada Attorney General's guidance relating to the Emergency Planning and Community Right-to-Know Act (EPCRA). According to the SERC, AAI requirements do not fall under the EPCRA program and the SERC does not and never has "regulated" ASTs. For these reasons, companies such as GeoSearch are unable to obtain current aboveground storage tank information. Please contact the SERC at (775) 687-6973 if you require information regarding the EPCRA reporting requirements of a specific facility within the State of Nevada.

BF Brownfield Properties

VERSION DATE: 8/2011

This listing of brownfield properties is maintained by the Nevada Division of Environmental Protection (NDEP). The NDEP describes brownfields as abandoned, idled, or underused industrial or commercial properties taken out of productive use because of real or perceived risks from environmental contamination. The State of Nevada has initiated Brownfields, a land-recycling program, to provide an opportunity to redevelop these undesirable properties and revitalize communities.

HWRECYCLERS Hazardous Waste Recycling Facilities

VERSION DATE: 1/2011

This listing of hazardous waste recycling facilities is maintained by the Nevada Division of Environmental Protection's (NDEP) Bureau of Waste Management. Nevada Administrative Code (NAC) 444.84555 requires a facility or mobile unit for the recycling of hazardous waste to obtain a Written Determination by the NDEP Administrator.

LUST Leaking Underground Storage Tanks

VERSION DATE: 8/2011

This database includes both Leaking Underground Storage Tank (LUST) cases as well as Corrective Action (non-regulated) sites and is maintained by the Nevada Division of Environmental Protection's Bureau of Corrective Actions.

NPDES National Pollutant Discharge Elimination System Permits

VERSION DATE: 3/2011

This listing of active NPDES Permits is maintained by the Nevada Division of Environmental Protection's Bureau of Water Pollution Control (BWPC). The BWPC issues National Pollutant Discharge Elimination System (NPDES) Permits for discharge to surface waters, ground water

permits for discharges that may impact subsurface waters, Underground Injection Control (UIC) permits for injection through wells, and Stormwater Permits.

RECYCLERS Recycling Facilities

VERSION DATE: NR

The recycling facilities included in this database are compiled from various city and county listings created between 2003 and 2008, and are provided by the Nevada Division of Environmental Protection.

SPILLS Spills Listing

VERSION DATE: 7/2011

The Nevada Division of Environmental Protection (NDEP) defines a release as any pollutant, hazardous waste or contaminant that has been spilled, leaked, pumped, poured, emitted, emptied, discharged, injected, escaped, leached, dumped or disposed into the environment. A spill of any quantity that affects a water way within the State of Nevada must be reported, regardless of the quantity.

SWF Solid Waste Facilities

VERSION DATE: 6/2010

This inventory of open and closed solid waste disposal facilities is maintained by the Nevada Division of Environmental Protection's Bureau of Waste Management.

TIERII Tier I I Facility Listing

VERSION DATE: 6/2008

The Nevada State Emergency Response Commission (SERC) provided this listing of Tier II facilities which store hazardous chemicals or materials on-site. The OSHA Hazard Communication Standard defines hazardous chemicals as any substance for which a facility must maintain a Material Safety Data Sheet (MSDS). In January of 2009, the SERC discontinued the sharing of facility specific information due to the U.S. Environmental Protection Agency's Office of General Counsel and a Nevada Attorney General's guidance relating to the Emergency Planning and Community Right-to-Know Act (EPCRA). For this reason, companies such as GeoSearch are unable to obtain current TIER II facility information. Please contact the SERC at (775) 687-6973 if you require information regarding the EPCRA reporting requirements of a specific facility within the State of Nevada.

UST Registered Underground Storage Tanks

VERSION DATE: 7/2011

This listing of registered underground storage tanks is maintained by the Nevada Division of Environmental Protection's Bureau of Corrective Actions.

VCP Voluntary Cleanup Program Sites

VERSION DATE: 8/2011

The Voluntary Cleanup Program (VCP) provides relief from liability to owners who undertake cleanups of contaminated properties under the oversight of the by the Nevada Division of Environmental Protection's Bureau of Corrective Actions.

CCSWLF Clark County Solid Waste Landfills

VERSION DATE: 11/2007

This listing of solid waste landfills located in Clark County is maintained by the Southern Nevada Health District's Environmental Health Division.

INDIANRES Indian Reservations

VERSION DATE: 1/2000

The Department of Interior and Bureau of Indian Affairs maintains this database that includes American Indian Reservations, off-reservation trust lands, public domain allotments, Alaska Native Regional Corporations and Recognized State Reservations.

LUSTR09 Leaking Underground Storage Tanks On Tribal Lands

VERSION DATE: 8/2010

This database, provided by the United States Environmental Protection Agency (EPA), contains leaking underground storage tanks on Tribal lands located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

ODINDIAN Open Dump Inventory on Tribal Lands

VERSION DATE: 11/2006

This Indian Health Service database contains information about facilities and sites on tribal lands where solid waste is disposed of, which are not sanitary landfills or hazardous waste disposal facilities, and which meet the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944).

USTR09 Underground Storage Tanks On Tribal Lands

VERSION DATE: 8/2010

This database, provided by the United States Environmental Protection Agency (EPA), contains underground storage tanks on Tribal lands located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

This page intended to be blank.

Appendix O

Bird and Bat Conservation Strategy

This page intended to be blank.

ARCADIS

Infrastructure · Water · Environment · Buildings

Imagine the result

K-Road Moapa Solar Generation Facility

Bird and Bat Conservation Strategy

Formerly known as:

Avian and Bat Protection Plan (ABPP)

January 2012

This page intended to be blank.

ARCADIS

Bird and Bat Conservation Strategy

350MW K Road Moapa Solar Generation Facility and up to 500kV Transmission Line

Chad A. Martin, CWB
Principal Biologist

John Kinsey
Biologist

Prepared for:
K Road Solar and the Bureau of Indian Affairs

Prepared by: ARCADIS-US

Tel
Fax

Our Ref.:
06923001.0000

Date:
January 2012

This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential and exempt from disclosure under applicable law. Any dissemination, distribution or copying of this document is strictly prohibited.

This page intended to be blank.

1. Introduction 1

1.1 Purpose 1

1.2 Goals 1

2. Laws, Regulations, and Cultural Traditions 2

2.1 Migratory Bird Treaty Act 2

2.2 Endangered Species Act 2

2.3 Bald and Golden Eagle Protection Act 2

3. Proposed Project 3

3.1 Project Area 3

3.2 Project Components 5

3.3 Project Description 6

3.3.1 Substation, Transmission Line and Interconnections 7

3.3.2 Up to 500 kV Transmission Line 9

3.3.3 12kV Transmission Line 9

3.3.4 Transmission line poles 9

3.3.5 Fire Prevention 11

3.3.6 Solar Field 11

3.3.7 Evaporation Pond 11

3.3.8 Lighting 11

4. Avian Use 12

5. Species of Interest 12

5.1 Burrowing Owl 12

5.2 Golden Eagle 13

5.3 Red-tailed Hawk 13

5.4 Cactus Wren 13

5.5 Greater Roadrunner 14

5.6 Bats 14

5.6.1 California-leafed nose bat 14

5.6.2 California myotis 15

5.6.3 Townsend big-eared bat 15

5.6.4 Big free-tailed bat 15

5.7 Other Avian Species of Concern 15

6. Areas of Risk 15

6.1 Collisions 15

6.2 Electrocution 16

6.3 Territory Abandonment and Nest Disturbance 16

6.4 Habitat loss and Fragmentation 17

6.5 Artificial Lighting 17

6.6 Evaporation Pond 17

6.7 Ongoing Human Disturbance 18

7. Mitigation Measures 18

7.1 Collision 18

7.2 Electrocution 19

7.2.1 Anti-Perching and Nesting 19

7.3 Habitat loss and fragmentation 19

7.4 Lighting 20

7.5 Nest Disturbance and Territory Abandonment 20

7.6 Evaporation Pond 21

7.7 General Housekeeping 22

8. Monitoring 22

8.1 Avian Monitoring 22

8.2 Permit Compliance 23

8.3 Training 23

8.4 Avian and Bat Mortality Surveys 23

8.4.1 Transmission Lines 24

8.4.2 Evaporation Pond 24

8.4.3 Solar field 24

8.4.4 Analyses 25

8.5 Nest Surveys 25

8.6 Reporting 25

9. Adaptive Management 25

10. References 27

Tables

Table 1 Project Construction Schedule Estimate (by Phase) 6

Figures

Figure 1 Project Area 4

Figure 2 Proposed Project Components 8

Figure 3 Transmission Line Poles 10

Appendices

A. Dead Bird/Nest Form and Animal/Bird Mortality Report

ARCADIS

Acronyms

ABPP	Avian and Bat Protection Plan
AFY	Acre Feet a Year
APLIC	Avian Power Line Interaction Committee
BBCS	Bird and Bat Conservation Strategy
BGEPA	Bald and Golden Eagle Protection Act
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
ESA	Endangered Species Act
GIS	Geographic Information System
GPS	Global Positioning Systems
kV	kilovolt
MBTA	Migratory Bird Treaty Act
NDOW	Nevada Department of Wildlife
NNHP	Nevada Natural Heritage Program
NPS	National Park Service
O&M	Operations and Maintenance
OEM	Original Equipment Manufacturer
PM	Preventative Maintenance
PV	Photovoltaic
RO	Reverse Osmosis
ROW	Right(s) of Way
T&E	Threatened and Endangered
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

ARCADIS

UTM	Universal Transverse Mercator
WEAP	Worker Environmental Awareness Program
WRRS	Wildlife Reporting and Response System

This page intended to be blank.

ARCADIS

1. Introduction

This Bird and Bat Conservation Strategy (BBCS), formerly known as an Avian and Bat Protection Plan (ABPP) is a voluntary, project-specific document that outlines a plan to reduce the risks that result from bird and bat interactions with components of and associated with a 2,000 acre solar facility. The goal of this, and any, BBCS is to reduce, and ultimately eliminate bird and bat mortality (USFWS 2010a). The statutory authority for addressing effects to birds stems primarily from the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), as well as the Endangered Species Act (ESA); for bats the United States Fish and Wildlife Service's (USFWS) statutory authority arises primarily from the ESA (USFWS 2010a).

1.1 Purpose

This BBCS has been prepared in compliance with state and federal regulations to outline project-specific practices and measures for reducing avian and bat impacts potentially resulting from operation of the K Road Moapa Solar Generation Facility (Project). Two of the greatest concerns with respect to the Project is the potential for avian and bat collision with power lines, as well as permanent loss of golden eagle (*Aquila chrysaetos*) foraging acreage. This plan presents a mitigation and monitoring scheme, which would allow K Road Solar (Proponent) to evaluate potential causes of take and implement appropriate corrective actions.

1.2 Goals

Implementation of this BBCS would fulfill multiple goals in an effort to reduce avian and bat mortality throughout the life of this Project. The goals specific to this BBCS are to:

- Identify and isolate where avian and bat mortality has the potential to occur and reduce the potential for avian and bat mortality by implementing specific mortality reduction actions;
- Establish an avian and bat reporting system to document incidents of electrocution and collision mortality;
- Assist the Proponents in compliance with state and federal laws regarding avian and bat species to avoid the threat of penalties and fines;
- Improve the Projects' reliability and services by reducing power outages due to avian and bat interactions;

- Reduce Project effects on avian and bat species through adaptive management or other actions.

2. Laws, Regulations, and Cultural Traditions

Native birds and bats in Nevada are protected primarily under three pieces of legislation: the ESA, MBTA, and BGEPA. The Moapa Band of Paiutes (Tribe) does not have tribal guidance or regulations concerning birds and bats within the Moapa River Indian Reservation (Reservation).

2.1 Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (16 US Code [USC] 703-712) is administered by the US Fish and Wildlife Service (USFWS) and is the cornerstone of migratory bird conservation and protection in the U.S. The Act authorizes the Secretary of the Interior to regulate the taking of migratory birds; and provides that it shall be unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird" (16 USC 703). The list of species protected by the Act was revised in March 2010, and includes almost all bird species (1,007 species) that are native to the US.

2.2 Endangered Species Act

Section 9 of the ESA prohibits everyone, private person and federal agency alike, from "taking" endangered and threatened wildlife. "Take" includes "harming" a listed species, and "harm" is defined by the USFWS regulations to include habitat alteration. Harm in the definition of "take" in the Act means, "an act which actually kills or injures wildlife." Any activity that may result in the "incidental take" of threatened or endangered species requires permission from the USFWS under ESA Sections 7 or 10.

2.3 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940 (as amended 1959, 1962, 1972, and 1978) prohibits the take, disturbance or possession of bald and golden eagles with limited exceptions. Take, in the Act, is defined as "to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." Disturb is defined in the Act as, "to agitate or bother a bald or golden eagle to a degree that causes or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding,

feeding or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding or sheltering behavior." Important eagle-use areas include eagle nests, foraging areas, or communal roost sites that eagles rely on for breeding, sheltering, or feeding, and the landscape features surrounding such nests, foraging areas, or roost sites that are essential for the continued viability of the site for breeding, feeding, or sheltering eagles.

3. Proposed Project

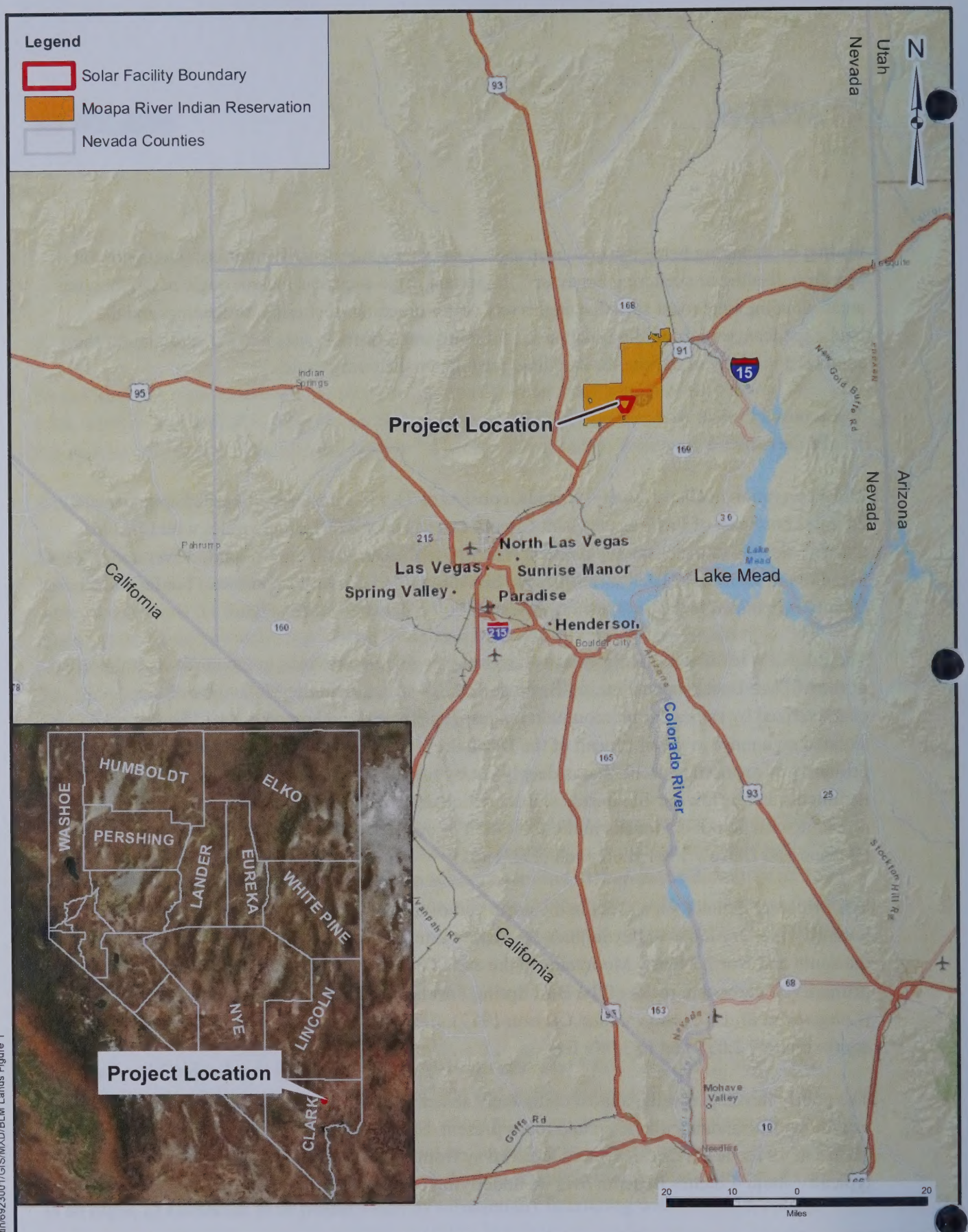
3.1 Project Area

The Reservation in Clark County, Nevada, consists of 71,954 acres of land located approximately 25 miles northeast of Las Vegas. Clark County extends over 8,091 square miles with Lincoln County, Nevada to the north, the Arizona state line to the east, with the Colorado River and Lake Mead to the southeast. The California state line forms Clark County's southwest border and Clark County is bounded to the west and northwest by Nye County, Nevada (Figure 1).

The Project is located in the Basin and Range physiographic province in the north central portion of the Mojave Desert upon a mesa. Basin and Range structure in the Mojave Desert is characterized by rather abrupt mountain ranges, generally of moderate height. The Project site is situated on a mesa in the north end of the Dry Lake Valley. The solar facility site consist primarily of exposed bedrock that is deeply cut by ravines and is surrounded by aprons of pediments and/or low-profile bajada slopes, which drain to interior closed basins. This interior drainage with no outlets results in the formation of evaporite playa lakes in the valley bottoms (Benson and Darrow 1981; Longwell et al. 1965).

The Project is situated on a mesa in the north end of the Dry Lake Valley. The mountains bounding the Dry Lake Valley include the Arrow Canyon Range to the west, Dry Lake Range to the south and North Muddy Mountains to the east. The Arrow Canyon Range is composed primarily of carbonate rocks of the Bird Spring Formation that are Ordovician to Permian in age (Longwell et al. 1965; Stewart and Carlson 1977). Elevations of the Proposed Project range from approximately 2,038 feet to 3,089 feet.

The poorly developed soils, almost completely absent in some areas, are mostly clayey sands, usually with abundant caliche-coated rocks present. Site soils are generally shallow, rarely in excess of 18 inches in depth, even in areas away from the base of the mountains, and are typically about 4 inches in depth over an underlying caliche layer.



Map Document:Austin\6923001\GIS\MXD\BLM Lands Figure 1

MALCOLM PIRNIE	K Road Power San Diego, California K Road Moapa Solar Facility	Moapa River Indian Reservation Project Vicinity Map	MALCOLM PIRNIE, INC. December 2011 FIGURE 1

The general ecological setting of the Project is consistent with Mojave Desert scrub. The area is dominated by open stands of creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Desert saltbush scrub habitat and cactus-yucca scrub are also present and concentrated within ephemeral washes. Cacti species observed during the biological surveys were the barrel cactus (*Ferocactus acanthodes*), beavertail cactus (*Opuntia basilaris*), cottontop cactus (*Echinocactus polycephalus*), hedgehog cactus (*Echinocereus engelmanii var. chrysocentrus.*), pencil cholla (*Opuntia ramosissima*), silver cholla (*Opuntia echinocarpa*) and teddybear cholla (*Opuntia bigelovii*). Arabian grass (*Schismus arabicus*), snakeweed (*Gutierrezia sp.*), desert trumpet (*Eriogonum inflatum*), catclaw (*Acacia greggii)* and winged saltbush (*Atriplex canescens*) were also identified.

A more detailed description of the project area can be found in the Draft Environmental Impact Statement for the K Road Moapa Solar Generation Facility for which this document is an Appendix to.

3.2 Project Components

The Project would include the following main elements:

- PV solar modules
- Single tracking systems mounted on embedded pier ballast or foundations
- Power inverters
- Three-phase pad mounted transformers that convert the output of each inverter to 34.5 kV
- An underground or overhead 34.5kV collection system to convey electricity from the solar field to the on-site substation
- On-site substation (approximately 15 acres)
- A 5.50-mile interconnection to the Crystal substation via an up to 500kV transmission line
- Modifications to the Crystal substation
- A 40-acre Operation and Management(O&M) area to accommodate the O&M building, parking area, temporary laydown area, evaporation/retention pond, and other construction associated facilities
- A 5.0-mile interior paved/gravel perimeter maintenance road

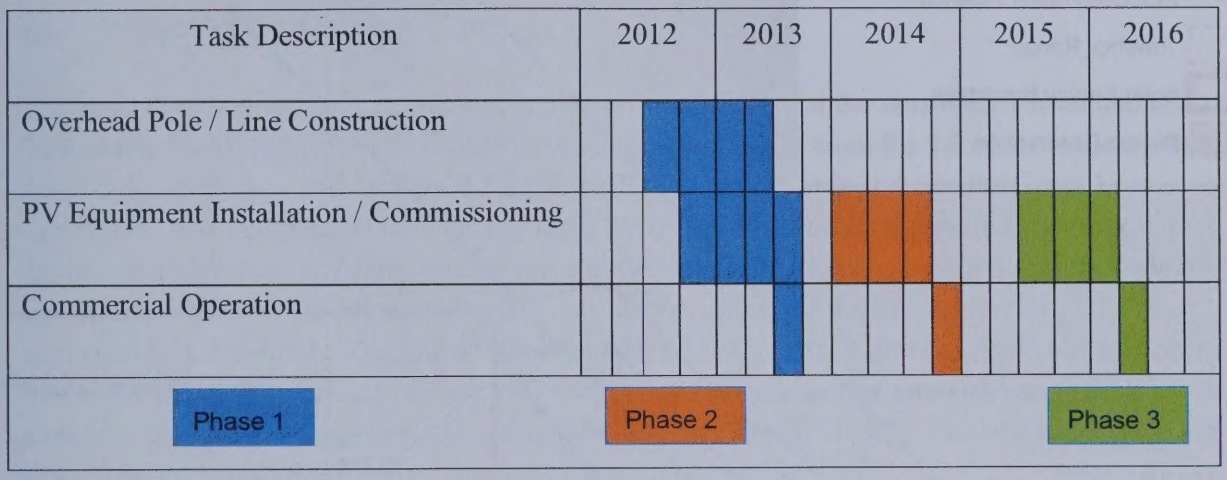
- An improved approximately 7-mile long access road along existing unimproved road within the BLM utility corridor
- Drainage controls to facilitate and/or slow drainage to existing ephemeral washes
- Storm water controls within drainage features to slow flash flood flow to nearby railroad culverts
- Approximately 7.14 miles of perimeter fence
- A 20-foot wide fire break around exterior of the perimeter fence

3.3 Project Description

The Project is expected to be divided into 3 phases. Table 1 shows the estimated Project construction schedule by phase.

Table 1 Project Construction Schedule Estimate (by Phase)

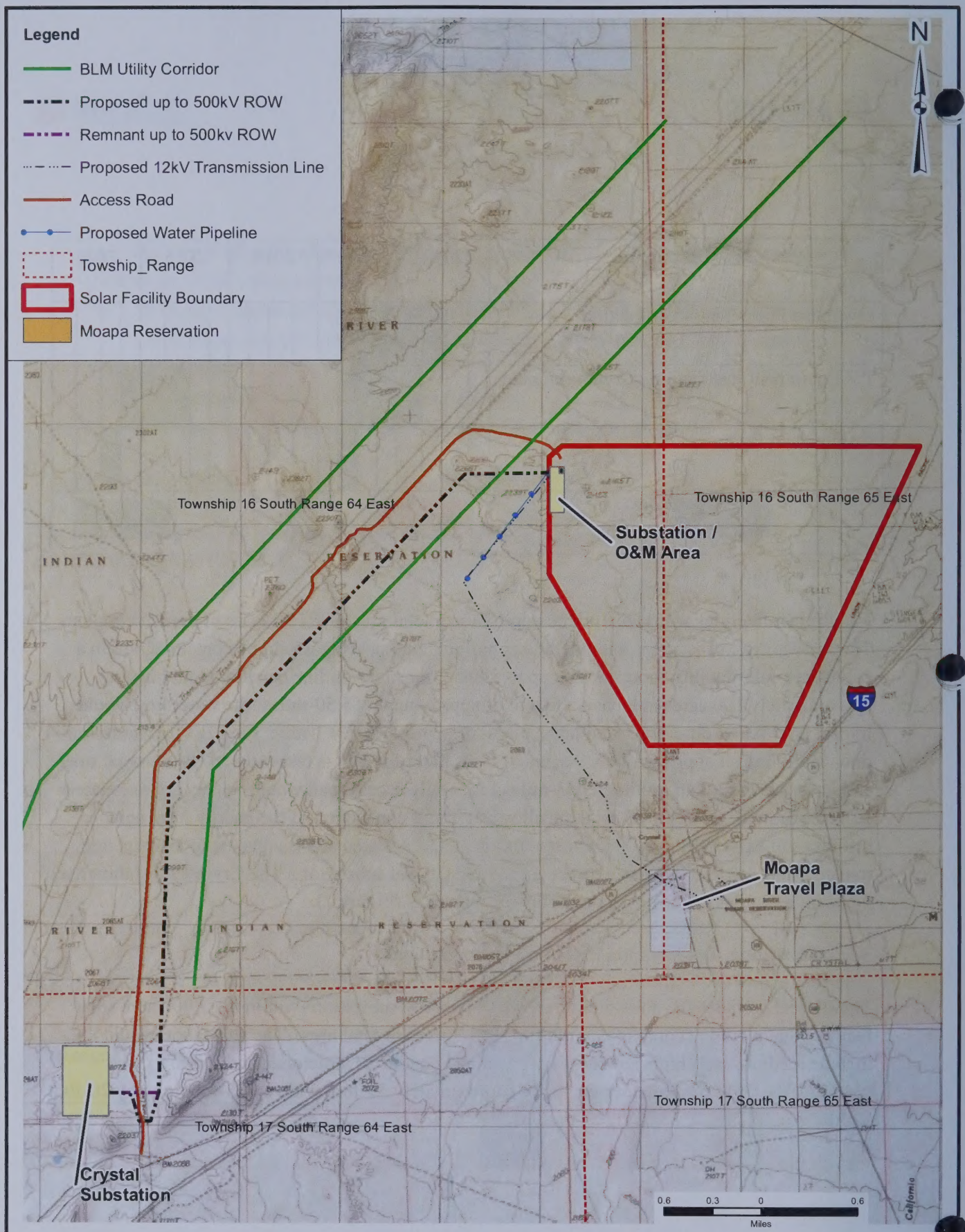
Task Description	2012	2013	2014	2015	2016
Environmental Clearance					
Site Access / Perimeter Fencing					
Site Preparation / Internal Access Roads					
O&M Area – Building Construction					
Drainage Controls					
Substation / Switchyard					



The Project facilities would disturb an approximate total area of 2,153 acres of the Reservation. The solar arrays, substation, and operations building and parking would be contained within a 2,000 acre solar facility footprint; the up to 500kV transmission line corridor would impact approximately 100 acres and have a length of approximately 5.50-miles; the water line would impact approximately 3 acres and have length of approximately 1-mile; the 12kV transmission line would impact approximately 9 acres of land, half of which is currently an unimproved road, and have a length of approximately 3-miles. A 7-mile access road would impact approximately 17 acres of land. The Project location allows efficient connection of the energy from solar resources to existing transmission infrastructure. The selected site is adjacent to an existing transmission corridor that has a direct path to the Crystal substation. The Crystal substation itself lies within 5 miles of the project's northwest boundary (Figure 2).

3.3.1 Substation, Transmission Line and Interconnections

The Project includes the construction of one (1) on-site substation (within the 2,000 acre solar facility) that would encompass approximately 15 acres in total area. The substation would include medium- and high-voltage switchgear and conductor structures, and (up to 3) 34.5 kV/230 kV or 500 kV transformers (each approximately 50-foot wide by 25-foot long by 20-foot high).



Map Document:Austin/6923001/GIS/MXD/BLM Lands Figure 1

MALCOLM PIRNIE	K Road Power San Diego, California K Road Moapa Solar Facility	Moapa River Indian Reservation Proposed Project	MALCOLM PIRNIE, INC. February 2012 FIGURE 2

3.3.2 Up to 500 kV Transmission Line

The up to 500kV transmission line would exit the solar facility at the northwest corner and utilize the existing BLM 4,000-foot wide utility corridor on the Reservation for 5.0 miles to the southern Reservation boundary and then for 0.5 miles on BLM land towards and into the Crystal substation. It would parallel the existing Kern River Gas Transmission pipeline. Specifically, the line would initiate at a substation at the northwest side of the proposed solar facility boundary and extend west to the utility corridor, then southwest within the utility corridor for approximately 2.7 miles. The line would then take a 45-degree turn and run south along the east side of the utility corridor as it exits the Crystal substation. From this point, the up to 500kV line turns approximately 90 degrees, extending west into an existing 500kV dead-end structure in the Crystal South 500 kV yard.

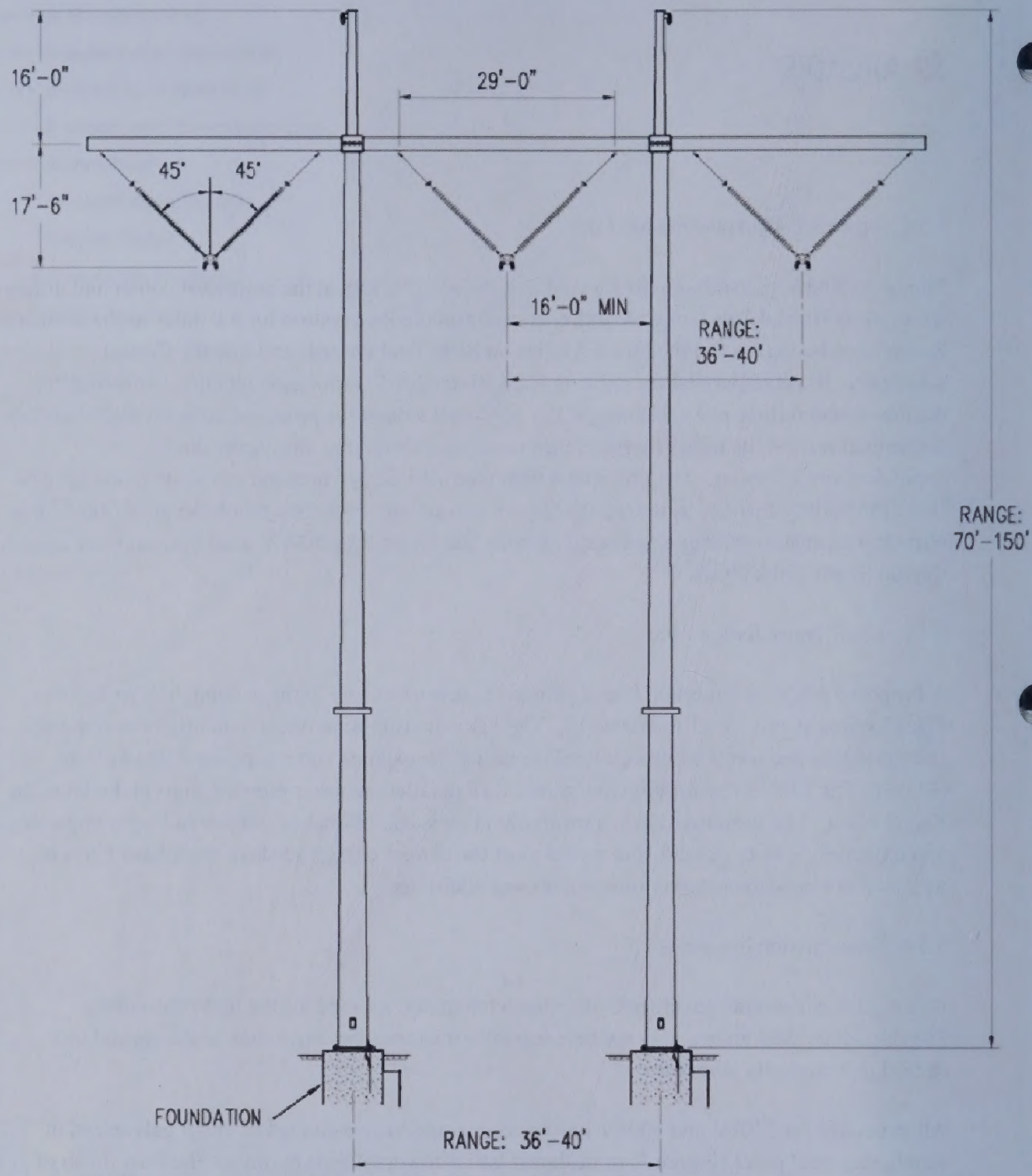
3.3.3 12kV Transmission Line

A Proposed 12kV transmission line is planned to deliver energy to the existing Moapa Travel Plaza located at exit 75 off Interstate 15. The 12kV transmission line would originate at the on-site substation and travel southwest until it reaches the existing water pipeline Right of Way (ROW). The 12kV Transmission line would then parallel the water pipeline to its endpoint at the Travel Plaza. The Proposed 12kV transmission line is approximately 3 miles in length impacting approximately 9 acres of land, and would meet the current energy needs of the Travel Plaza as well as accommodate future improvements and additions.

3.3.4 Transmission line poles

Due to time constraints governed by the projected in-service date for the first phase of the Project, lattice steel towers may not be a feasible structure type, since time to design and test exceed that currently allowed.

All structures for 230kV and 500kV line options would be constructed of either galvanized or weathering steel poles (Figure 3) or designed lattice towers if time permits. The final finish of the steel poles would be determined as part of the detailed design process. For both 230kV and 500kV options, tangent structures are recommended to be configured as H-frame or two-pole, while dead-end and angle structures are recommended to be constructed as three-pole designs. 12kV poles would be of wood and placed into pre-augured holes at a depth suitable for stability.



NOTES:

1. ALL DIMENSIONS AND RANGES PROVIDED ARE TYPICAL IN NATURE AND NEED TO BE VERIFIED DURING DETAIL DESIGN.

MALCOLM PIRNIE	K Road Power San Diego, California K Road Moapa Solar Facility	Moapa River Indian Reservation Typical 230kV or 500kV Transmission Line Structure	MALCOLM PIRNIE, INC. December 2011 FIGURE 3

Map Document:Austin\6923001\GIS\MXD\EIS\Figure 2-6

3.3.5 Fire Prevention

A 20-foot wide, 7.13-mile long fire break, void of vegetation, would be constructed outside the solar facility perimeter fence to prevent wildfire from entering or exiting the site. The Project's fire protection system would include one above-ground storage tank with a 150,000-gallon capacity located adjacent to the O&M building and filled from the existing well located on the Reservation.

3.3.6 Solar Field

The solar field would be constructed in 0.5 MW (500 kW) blocks. Each block would be approximately 280 feet by 10 feet and would contain 900 solar modules, a set of inverters, and a medium voltage transformer. The sub-surface soil condition of the site is primarily composed of a thick layer of hard caliche. Therefore, vertical fixed tilt and tracker poles would be installed using a direct drill and placement with cementing materials or pre-cast ballasts where drilling is not practical. Drilled holes 6 to 8-foot deep would be completed using track or tired vehicle drilling rigs.

3.3.7 Evaporation Pond

Potable water treatment equipment, most likely Reverse Osmosis (RO), would be installed and connected to the on-site water storage tank. The water treatment system would have to incorporate effluent waste discharge from the RO process. The RO process would accumulate approximately 4.2 AFY of discharge that would be temporarily held in an on-site evaporation pond properly sized for the Project's operations.

3.3.8 Lighting

Permanent lighting would be installed within the substation and O&M area. Lighting would be designed to provide the minimum amount of illumination needed to achieve objectives and not emit excessive light to the night sky by focusing desired light in a downward direction. Lighting would not be erected within the solar field; however, truck-mounted lights may be used at night for maintenance or to provide security measures when needed.

4. Avian Use

Information on avian species which use the project area was gathered through desktop assessment, literature review and field surveys. Desktop analyses were conducted by reviewing current regional literature and accessing agency Internet biological databases and resources: Nevada Department of Wildlife (NDOW) Diversity GIS Data, National Park Service (NPS), USFWS, U.S. Geological Survey (USGS) topographic maps, Nevada Natural Heritage Program (NNHP) database, and aerial imagery as well as review of existing reports and studies that were conducted for similar projects at or near the Project.

5. Species of Interest

Species of interest were gathered from federal threatened and endangered (T&E) species lists and information assessed in the draft EIS. Other species of interest were taken from the BLM sensitive species list and Solar Energy Development Draft Programmatic Environmental Impact Statement prepared by the BLM (2010) and are discussed in more detail below.

5.1 Burrowing Owl

Burrowing Owls (*Athene cunicularia*) inhabit the Mojave Desert portions of Clark County and are protected under the MBTA. Burrowing Owls in southern Nevada are active year-round, and tend to be year-round residents as opposed to migratory (NDOW 2008).

Burrowing Owls are found in open dry shrub/steppe grasslands, agricultural and range lands, and desert habitats associated with burrowing animals (NDOW 2010a). They consume an assortment of prey items consisting of beetles, grasshoppers, scorpions, small mammals, reptiles, other birds and bats. These owls primarily reside and nest in the abandoned burrows of the desert tortoise, although the burrows of kit foxes and other mammals are used as well.

During the October 2010 desert tortoise site survey, three Burrowing Owls and/or burrows were noted on the site. These sites were located along steep cliffs where it is not practical to place solar facility infrastructure; however, loss of foraging habitat may occur.

5.2 Golden Eagle

The Golden Eagle is protected under the BGEPA, which includes the September 11, 2009 Eagle Rule (Rule) 50 CFR parts 13 and 22, as well as the MBTA. Helicopter surveys completed in 2009 by NDOW indicate that suitable nesting habitat and remnant nests occur in the Arrowhead Canyon area approximately 8-10 miles west of the Project. It is not likely that Golden Eagles would be impacted directly; however, they could be impacted indirectly through loss of potential foraging habitat. The construction and O&M of the Project is not expected to result in take. However, the potential for collision with and electrocution by transmission lines would be increased by the construction of this project if proper precautions are not taken.

5.3 Red-tailed Hawk

The Red-tailed Hawk (*Buteo jamaicensis)* is protected under the MBTA. The Red-tailed Hawk is the most widespread and familiar of the soaring hawks (buteos) in North America (NDOW 2010b). In Nevada, the Red-tailed Hawk is found in the Mojave Desert. Wintering populations in Nevada are between 100-150 residents and are monitored on a triennial basis.

The Project site, as a whole, is quite open, and provides suitable hunting habitat for the Red-tailed Hawk. The Project is likely to impact buteo species through loss and fragmentation of foraging habitat and has the potential to cause electrocution due to collision with power lines.

5.4 Cactus Wren

The Cactus Wren (*Campylorhynchus brunneicapillus)* is protected under the MBTA. This wren inhabits southern Nevada amidst semi-desert and desert areas around cacti, yucca, mesquite, and brush. The cactus wren favors cholla for building nests and roosting. Within the Project area, Cactus Wrens are likely to occur in areas where vegetation is sparse and where chollas provide suitable nesting sites. The Project would potentially result in loss of nesting and foraging habitat for cactus wren within the Project area.

5.5 Greater Roadrunner

The Greater Roadrunner (*Geococcyx californianus*), is listed as a protected species under the MBTA. Although habitat is limited, the roadrunner is found in open arid and semiarid country with scattered brush. Nesting occurs in thorny bushes, small trees or cacti. The Greater Roadrunner is likely to occur within the Project site as there is suitable habitat present. Fragmentation and intensity of human activity adjacent to remaining occupied habitat pose an increasing threat to roadrunner existence within the Project area.

5.6 Bats

No bats are currently listed by the USFWS or the Nevada Natural Heritage Program as threatened or endangered in Clark County, Nevada (USFWS 2010b, Nevada Natural Heritage 2009). The BLM has listed four species of bat as sensitive species. BLM policy is to provide these species with the same level of protection as is provided for candidate species in BLM Manual 6840.06 C (2010), that is to "ensure that actions authorized, funded, or carried out do not contribute to the need for the species to become listed." There were no potential bat roosts (i.e. caves) identified during 100% coverage surveys conducted in 2010. The four protected bat species: California-leafed nose bat (*Macrotus californicus)*, California myotis (*Myotis californicus*), Townsend's big eared bat (*Plecotus townsendii*), and big free-tailed bat (*Nyctinomops macrotis*), are only expected to be present within the Project area during nocturnal foraging events.

Artificial lighting and the presence of the evaporation pond could alter the foraging behavior of migratory and non-migratory bat species. The loss of the natural vegetation could decrease the prey availability (i.e., insects) within the Project area for nocturnally feeding bats. Additional light sources during the operation could alter the flight patterns of migratory bat species as the artificial lighting could attract insects, creating a concentrated feeding location.

5.6.1 California-leafed nose bat

This species of bat hunts at night by flying low to the ground, most often feeding on insects. When foraging, they hunt mostly by sight rather than echolocation, except when in complete darkness (TPWD, No Date).

5.6.2 California myotis

The California myotis hunts by slowly flying over open areas, feeding on insects. They hunt mostly after sunset and rely on small open areas of surface water to meet their water requirements (Smithsonian National Museum of Natural History, No Date a).

5.6.3 Townsend big-eared bat

This species of bat most efficiently forages by gleaning insects directly from foliage in open areas near wooded habitats and along heavily vegetated stream corridors (Gruver and Kienith 2003).

5.6.4 Big free-tailed bat

The big free-tailed bat feeds in complete darkness for large insects, not leaving their roosts until after sunset (Smithsonian National Museum of Natural History, No Date b).

5.7 Other Avian Species of Concern

Other T&E species and species listed in the Dry Lake Solar Energy Zone EIS, including Yuma Clapper Rail (*Rallus longirostris yumanensis*), Yellow Billed Cuckoo (Coccyzus americanus), Southwestern Willow Flycatcher (*Empidonax traillii extimus*), and Le Conte's Thrasher (*Toxostoma lecontei*), and others, were excluded due to lack of suitable habitat within the Project area.

6. Areas of Risk

6.1 Collisions

Vulnerability to collision depends on many factors including bird behavior and maneuverability, topography, weather, and power line design and placement. Bird collision with power lines has been documented for decades, and risk of collision is considered highest in areas where birds congregate, such as power lines that bisect daily flight paths to meadows, wetlands and river valleys (APLIC 1994).

Birds may have significant "blind spots," increasing risk of collision even during daylight hours. Scanning below for prey or roost sites can render them blind to objects in the direction of travel

(Martin and Shaw 2010). Transmission lines are the Project components that present the greatest risk of avian collision. Given that the utility corridor is currently populated with seven electric transmission lines ranging in size from 230kV to 500kV it is assumed that the addition of two proposed lines on the east side of the existing utility corridor would not have a cumulative effect on in-air collision. The existing lines have been in place for many years and foraging flight patterns have most likely adapted to the vast size of the utility infrastructure.

There is no scientific evidence of fatality risks to birds associated with solar PV arrays. Heliostats - mirrors used in concentrating solar energy have been found to cause fatalities through collisions and burns in the U.S. (McCrary et al. 1986). PV panels are dark black rather than reflective and are designed to absorb rather than reflect sunlight. Therefore, risk of collision is greatly reduced by using PV arrays rather than heliostats or other concentrated solar technologies.

6.2 Electrocution

Avian electrocutions can occur when a bird completes an electric circuit by simultaneously touching two energized parts or an energized part and a grounded part of the electrical equipment. This is also the number one risk of avian electrocution at the Project. Eagle mortalities were investigated by the Department of the Interior from the early 1960s to 1995 and electrocution was reported as the second greatest cause of mortality in Golden Eagles and the third greatest cause for Bald Eagles (APLIC 2006).

6.3 Territory Abandonment and Nest Disturbance

The Tribe, Bureau of Indian Affairs (BIA) or the BLM do not have regulations quantitatively limiting noise generation or effects from the Project during the temporary construction phases or operational phase. The EPA has developed and published a criterion to be used as an acceptable guideline when no other local, tribal, county, or state standard has been established. The Project would affect ambient noise and vibration levels if it would result in the generation of noise levels or exposure of sensitive species to noise levels or ground-borne vibration in excess of standards established in applicable federal, state, and local general plans or noise ordinances.

There is the potential for Golden Eagles, as well as other bird species, to use the Project area for foraging and other birds for nesting. Birds would be susceptible to noise disturbance as described above, potentially resulting in alteration of foraging and nesting behaviors. There is a potential for

nest disturbance of migratory birds as well as disturbance of burrowing owl burrows during the construction phase of the project due to noise, removal of vegetation, and leveling the ground. Known Golden Eagle nesting areas are located 8 to 10 miles from the Project. It is not suspected that noise and other construction activity would affect nesting behavior at this distance.

Short term impacts could result to birds; however, the area within the fenced solar facility would be void of sensitive or listed species, for the exception of burrowing owls on cliffs where capture and removal is not practical. Impacts to vegetation and presence of humans and machinery would deter most birds from within the solar facility and therefore noise impacts to wildlife would be focused upon species adjacent to the facility. Given the location of the facility upon the mesa and the presence of a 20-feet wide firebreak around the perimeter it is assumed that only short term impacts would occur from noise and vibration during the construction phase. Most non-listed bird species would return to the area after construction if significant habitat and foraging opportunity exists.

6.4 Habitat loss and Fragmentation

An estimated 2,000 acres considered suitable foraging habitat for Golden Eagles and other avian/bat species discussed in this BBCS would be affected by the Project. Loss of foraging habitat could impact foraging behaviors of these avian and bat species. This loss is assumed to have only minimal adverse impacts to the Golden Eagle populations within the known nesting grounds of Arrowhead Canyon due to the vast foraging area of the Valley.

6.5 Artificial Lighting

Additional light sources during the operation could result in concentrated foraging locations of avian and bat species which feed on insects nocturnally, as the artificial lighting could attract insects. Artificial lighting also has the potential to negatively affect migration patterns of migratory birds and bats that move through the area.

6.6 Evaporation Pond

Potable water treatment equipment, most likely Reverse Osmosis (RO), would be installed and connected to the on-site water storage tank. The water treatment system would have to incorporate effluent waste discharge from the RO process. The RO process would accumulate approximately 4.2 AFY of discharge that would be temporarily held in an on-site evaporation pond properly sized for the Project's operations. The RO process would accumulate organic

chemicals within the evaporation pond that could potentially harm birds or bats if used as a water source.

6.7 Ongoing Human Disturbance

Maintenance would consist of dust control and grounds upkeep, cleaning and repair of modules, repair and upkeep of all transformers, inverters and wiring collection systems, control systems upkeep, building maintenance and water treatment, and permanent storm water controls and maintenance.

Routine Preventative Maintenance (PM) activities would be scheduled in accordance to the frequencies outlined in the Original Equipment Manufacturer (OEM) specifications. O&M would require the use of vehicles and equipment including but not limited to welding, re-fueling, lubricating, panel washing equipment, forklifts, manlifts, and chemical sprayers for weed abatement. Flatbed trucks and pick-up trucks as well as utility vehicles would be used on a daily basis during construction at the facility and on-site.

Major equipment maintenance and overhauls would be completed at intervals of approximately 5-10 years. Replacement of non-functioning equipment may require the use of heavy haul transport equipment and large overhead cranes. O&M activities are expected to have little or no added impacts to birds or bats in the area.

7. Mitigation Measures

All aspects of the Project components would be built using avian-safe practices suggested by Avian Power Line Interaction Committee (APLIC) (APLIC 2006, 1994).

7.1 Collision

All potential collision areas of the transmission line corridor would incorporate flight diverters on the static line to make it more visible. Static lines are the smallest diameter lines, and potentially the most difficult for birds to see and avoid. Where any pole requiring guy wires is located near areas of concentrated bird activity, guy wires would be marked to increase visibility where possible. Currently, guy wire locations are not known. Bird diverters are not located on existing guy wires in the area, therefore the assumption is being made that the utility corridor does not experience concentrated bird activity. Post construction monitoring will verify or nullify this

assumption. Flight diverters will be installed through adaptive management measures if collision is verified as a cause of mortality. Flight diverter types and locations would be determined through consultation with the BLM, USFWS, and/or NDOW. The number of structures needing the use of guy wires would be kept to a minimum.

7.2 Electrocution

All transmission towers and poles would be designed to be avian-safe in accordance with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 APLIC 2006). All aspects of the substations, switching stations, transformers and power lines would be constructed utilizing avian-safe practices as suggested by APLIC using industry standards (APLIC 1994, 2006). Any potential electrocution caused mortality to avian or bat species would be captured under the reporting system (Appendix A).

7.2.1 Anti-Perching and Nesting

To reduce perching along segments of the transmission line, perch deterrents would be installed during construction. Anti-perching and nesting devices are important tools for reducing the risk of avian electrocution and keeping the entire electrical system running smoothly. These deterrents also eliminate the use of transmission lines and transmission line towers as hunting perches for raptor species, limiting the predation of other avian species or animals which use surrounding vegetation for foraging and nesting. Exact locations of perch deterrent poles would be determined in consultation with wildlife agencies prior to construction of the line.

Inspections of lines and other areas where raptor or corvids (crows and ravens) might nest along the transmission lines would be conducted annually. Non-active nests are not protected by MBTA and removal would be conducted prior to the next breeding season. Should nesting activity become a long-term issue, alternate measures to discourage nesting activities should be implemented. Prior to removing or relocating any nests, facility personnel would consult with USFWS and when necessary, proper permissions via USFWS would be obtained. Reporting of nests and nest relocation would be completed using forms found in Appendix A.

7.3 Habitat loss and fragmentation

Construction of the linear water pipeline and electric transmission lines would have a short-term effect on vegetation, but the areas would be allowed to re-vegetate or be restored and wildlife

species would be able to reutilize them for habitat and foraging. Use of the existing utility corridor for access and transmission isolates the impact to a previously-impacted area, and aids in reduction of impacts to historically un-impacted areas within the Reservation. Vegetation would not be removed from the solar facility area unless it is located along planned access or maintenance roads or the area requires grading to ensure stable or level area for PV module construction. Vegetation that interferes with PV modules would be trimmed or mowed to 12 inches.

A Weed Management Plan (WMP) has been be prepared and will be submitted to the BIA, BLM and the Tribe for review and approval before construction begins. Methods of noxious weed and invasive species identification, prevention and treatment for the Project are outlined in the WMP. The WMP recognizes the Project's impact on vegetation and defines the expected treatments and activities necessary to both maintain the determined desired conditions for the vegetation community within the Reservation, and control the weeds that may arise within the Project's 2,000-acre solar facility footprint.

7.4 Lighting

Lighting would be designed to provide minimum illumination needed to achieve O&M objectives and not emit excessive light to the night sky by installing light absorbing shields on top of all light fixtures, and focusing desired light in a downward direction (Reed et al. 1985). This would reduce the visibility of the lights to migratory birds traveling through the area. Downward facing lights would also reduce the number of insects attracted to lights resulting in a decrease of potential concentrated feeding areas for bats. Any additional lighting needed to perform activities such as repairs would be kept to a minimum and only used when these actions are in progress.

7.5 Nest Disturbance and Territory Abandonment

A qualified biologist would conduct pre-construction nest surveys within 30 days prior to any environmental clearing activities to identify all active nests within the construction area, and the vegetation and habitat type in which each nest is found will be recorded. Environmental clearance activities would be performed primarily before the onset of Phase I construction; however, environmental monitors would be in place during the entire construction period to minimize impacts to natural resources. During the environmental clearance stage trained biologists would relocate bird nests only after young have fledged and perform any mitigation measures necessary to reduce or eliminate negative effects on wildlife species inhabiting the

construction area. Activities associated with removal or relocation of nests would be regulated by the USFWS.

All vegetation clearing and ground scraping activities would be conducted outside the migratory bird nesting season when practical. If ground-disturbing activities cannot be avoided during this time period, pre-construction nest surveys shall be conducted by a qualified biological monitor (USFWS 2010c). For all non-raptor bird species, surveys would cover all potential nesting habitat in and within 300 feet of the area to be disturbed. Any disturbance or harm to active nests would be reported within 24 hours to the USFWS and the BLM, if on BLM lands. The biological monitor may halt work if it is determined that active nests are being disturbed by construction activities and the appropriate agencies would be consulted.

Golden Eagle nests located within one mile of any construction activities would be monitored by a qualified biologist. If an active Golden Eagle nest is located with one mile of a construction area, a one mile no-disturbance buffer zone would be established. Construction may commence once a qualified biologist has determined the young have fledged or the nest is no longer active. Disturbance buffers for other raptors would follow the USFWS Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (1999) to determine appropriate survey areas and disturbance buffers for active nests.

A qualified biologist would conduct pre-construction surveys within 30 days prior to construction for Western Burrowing Owl within suitable habitat prior to breeding season. All areas within 250 feet of the Project would be surveyed, per USFWS 2007 Burrowing Owl guidance. If an active nest is identified, there would be no construction activities within 250 feet of the nest location to prevent disturbance until the chicks have fledged, as determined by a qualified biologist. The occurrence and location of any Western Burrowing Owl would be documented by biological monitors in daily reports and submitted to the authorized biologist on a daily basis. The authorized biologist would report all incidents of disturbance or harm to Western Burrowing Owls within 24 hours to the USFWS and report any incidence on the proper form (Appendix A).

7.6 Evaporation Pond

The RO process would accumulate approximately 4.2 AFY of discharge that would be temporarily held in an on-site evaporation pond properly sized for the Project's operations. The RO process would accumulate organic chemicals that could potentially harm birds or bats if used as a water

source. To eliminate avian and bat use of the evaporation pond at the project site, the pond would be covered with bird proof netting.

7.7 General Housekeeping

To minimize activities that attract prey and predators during construction and operations, garbage will be placed in approved containers with lids and removed promptly when full to avoid creating attractive nuisances for birds and bats. Open containers that may collect rain water will also be removed or stored in a secure or covered location to not attract birds.

8. Monitoring

The construction of this Project would be completed in three phases. Each phase of construction would be monitored closely for three years after completion in order to determine whether the mitigation measures being used are effective or if they need to be adapted to better fit the needs of the Project. Monitoring periods could be extended if proper progress is not being made in reduction or elimination of avian and bat related incidents.

8.1 Avian Monitoring

Pre-construction avian surveys would be conducted by qualified biologists prior to the first phase of construction. During these surveys, a list of avian species found in the area and the habitat type in which they were found would be compiled and used as a reference during post construction monitoring to evaluate the effectiveness of implemented mitigation techniques. Active nests would also be recorded and a buffer area would be placed around the nest location. Removal or relocation of the nest would only occur after the young have fledged.

Biological monitors would be assigned to the Project in areas of sensitive biological resources. The monitors would be responsible for ensuring that impacts on special status species, native vegetation, wildlife habitat, or unique resources would be avoided to the fullest extent possible. Where appropriate, monitors would flag the boundaries of areas where activities would need to be restricted to protect the species of concern discussed in this BBCS as well as other plant and animal species not listed. Those restricted areas would be monitored to ensure their protection during construction.

8.2 Permit Compliance

The Proponents may find it necessary in some situations to obtain federal and state permits regarding avian and bat species, including nest removal or relocation permits. In such a situation, the Proponents may obtain them by working with the federal and state resource agencies to determine which permits are necessary. Under no circumstances would the Proponents perform any activity requiring a permit without first obtaining the proper permit or authorization to do so.

8.3 Training

A Worker Environmental Awareness Program (WEAP) would be prepared. All construction crews and contractors would be required to participate in WEAP training prior to starting work on the Project. The WEAP training would include a review of the special status species and other sensitive resources that could exist in the Project area, the locations of sensitive biological resources and their legal status and protections, and measures to be implemented for avoidance of these sensitive resources. A record of all trained personnel would be maintained.

8.4 Avian and Bat Mortality Surveys

To determine cause and rate of avian and bat mortality, mortality surveys would be conducted biweekly. Transects would be selected randomly, and cover 30% of each area to be surveyed. A single qualified observer would walk along pre- determined transects searching for bird and bat carcasses. The observer would walk along the path and scan away from the transect to detect carcasses. When a carcass is observed, the observer would walk the shortest distance to the carcass. A GPS location (in UTM) would be recorded, the species identified and information regarding carcass condition would be collected at each carcass discovery (Appendix A). The GPS data will be used to identify areas of the Project facilities with higher mortality rates, allowing the Project Proponents to concentrate future adaptive management strategies in these high mortality areas.

Each carcass (not the location) would be uniquely and inconspicuously marked with tape and permanent marker. All carcasses would be left exactly as found. By marking carcasses, future encounters with the same carcass would not be counted twice, and rates of scavenging could be calculated. This will help avoid an overestimate of mortalities and determine the best time interval

between surveys. Once data is collected at a carcass, the observer would return to the transect, and continue with the survey.

Carcasses would be assigned to one of the following 4 classes at each encounter: 1) fresh (eyes are still wet and not totally sunk into sockets), 2) medium (eyes are totally sunk into sockets and breast muscle and viscera still present), 3) non-scavenged carcass (a stiff carcass consisting of a dried complete carcass), 4) remnant (a dried carcass consisting of non-edible parts). If the majority of first time observations are rated with higher classes, the intensity at which the mortality surveys are being conducted would increase to assure early detection and allow for determination of cause of death. Additionally, the presence or absence of evidence of electrocution (singed feathers) or collision would be recorded (USFWS 2011).

Avian and bat vehicular collisions would be monitored as employees travel the Project's roads. If a bird or bat is struck by a vehicle, or if a bird or bat is found injured or dead along Project roads, the necessary portions of the Coincidental Animal/Bird Mortality Report Form would be filled out by the observer and the on-duty qualified biologist would be notified.

8.4.1 Transmission Lines

The entire length of both transmission line corridors would be walked during each survey by 2 individuals, 15 feet apart, simultaneously to cover 100% of the corridor. Each observer will walk a circle around the base of each transmission pole, one with a radius of 10 feet, and the other with a radius of 20 feet.

8.4.2 Evaporation Pond

Though netting will be in place, the immediate edges of the evaporation pond would be walked to monitor floating carcasses or carcasses which have been washed to shore to determine the effectiveness of the nest. If multiple ponds occur, efforts would be made to sample each pond (USFWS 2011).

8.4.3 Solar field

Transects within the solar field would cover 30% the entire area and would begin and end at an edge of the array so that an entire row or column is covered with a single transect (USFWS 2011).

8.4.4 Analyses

Primary analyses would be conducted using Program DISTANCE (Thomas et al. 2010) to determine the most effective transect width to search for carcasses. Other statistical analyses would estimate total number of mortalities controlling for detection rate, scavenging rate, and proximity to the power tower or solar module (USFWS 2011).

8.5 Nest Surveys

Nest surveys would be conducted prior to the first nesting season, after completion of each phase of construction, and continue once each month during the nesting season for the first three years post-construction. Aerial or ground based raptor nest surveys would be conducted within the entire project area. Nest locations found within the project area would be documented by noting the species, dates of activity, UTM coordinates, and nest contents (Appendix A). The data would be analyzed to determine whether mitigation should be implemented to reduce impacts to nesting activities.

8.6 Reporting

The Proponents would implement a Wildlife Reporting and Response System (WRRS). The purpose of the WRRS is to standardize the actions taken by the Proponent or subcontractors in response to any wildlife fatalities or injuries observed within the Project boundary. Any dead or injured animals found within the Project boundary by Project employees would be marked and its location reported immediately to the qualified biologist on-duty, and a coincidental mortality report form would be filled out (Appendix A). The qualified biologist would proceed to the site of the discovery, would complete an incident report, and take photographs. The carcass or injured animal would not be moved or removed by any individual who does not have the appropriate permits. If an endangered or threatened species is found dead or injured on the site, the qualified biologist would immediately notify the USFWS of the discovery.

9. Adaptive Management

Upon observation of avian/bat mortality or other interaction with components of the solar facility (i.e. collision), mitigation techniques would be evaluated and adapted to better fit the needs of the project in the reduction or elimination of these interactions. Reactive measures would include protection measures implemented after bird or bat mortality has occurred as outlined in Chapter

7.6. Most adaptive management practices would be developed through reactive measures, such as, but not limited to, utilization of different flight diverters, hazing, anti-perching techniques or other operational activities. As incidents occur, the Proponents, contractors, or subcontractors would respond appropriately through documentation via the WRRS (see Section 7). A qualified person would evaluate the circumstances leading to the incident and report the findings to the Proponents so that they may begin taking proper action, in consultation with the USFWS, to prevent similar incidents in the future.

10. References

APLIC (Avian Power Line Interaction Committee). 2006. Suggested practices for avian protection on power lines: The state of the art in 2006. Washington, D.C. and Sacramento, CA: Edison Electric Institute, Avian Power Line Interaction Committee, and California Energy Commission.

APLIC (Avian Power Line Interaction Committee). 1994. Mitigating bird collisions with power lines: the state of the art in 1994. Washington, DC: Edison Electric Institute; 78 p.

Benson & Darrow. 1981. Trees and shrubs of the southwestern deserts. The University of Arizona Press, Tucson, Arizona.

BLM. 2010. Solar Energy Development Draft Programmatic Environmental Impact Statement. http://solareis.anl.gov/sez/drylake/index.cfm. Accessed 2 January, 2012.

BLM. 2001. 6840-Special Status Species Management. 51 Pages.

Gruver, J. C. and D. A. Keinath. 2003. Species Assessment for Townsend's Big-Eared Bat (*Corynorhinus [=plecotus] townsendii*) in Wyoming. http://www.blm.gov/pgdata/etc/medialib/blm/wy/wildlife/animalassessmnts.Par.35707.File.dat/TownsendBig-earedBat.pdf. Accessed 2 January, 2012.

Longwell, C. R., Pampeyan, E.H., Boweyer, B., and Roberts, R.J. 1965, Geology and mineral deposits of Clark County, Nevada: Nevada Bureau of Mines and Geology Bulletin 62, 218p.

Martin, G.R. and J.M. Shaw. 2010. Bird collisions with power lines: Failing to see the way ahead? Biological Conservation 143 (2010) 2695–2702. August 2010.

McCrary, M.D., R. L. McKernan, R. W. Schreiber, W. D. Wagner, and T. C. Sciarrotta. 1986. Avian Mortality at a Solar Energy Power Plant. Journal of Field Ornithology. 57(2) 135-141.

NDOW. 2010a. Nevada Fauna Facts: Burrowing Owl. http://www.ndow.org/wild/animals/facts/birds_owl_burrowing.shtm. Accessed January 6, 2011.

NDOW. 2010b. Nevada Fauna Facts: Red-tailed Hawk. http://www.ndow.org/wild/animals/facts/birds_redtailed_hawk.shtm. Accessed January 6, 2011.

NDOW. 2008. Keeping an Eye on Burrowing Owls. http://www.ndow.org/about/news/pr/102908_burrowing_owls.shtm. Accessed January 6, 2011.

Nevada Natural Heritage Program. 2009. Department of Conservation and Natural Resources. http://heritage.nv.gov/index.htm. Accessed January 6, 2011.

Reed, J.R., Sincock J.L., Hailman J.P. 1985. Light attraction in endangered procellariiform birds: reduction by shielding upward radiation, *The Auk*, 102, 377-383.

Smithsonian National Museum of Natural History. No Date a. North American Mammals: *Macrotus californicus*. http://www.mnh.si.edu/mna/image_info.cfm?species_id=145. Accessed 2 January, 2012.

Smithsonian National Museum of Natural History. No Date b. North American Mammals: *Nyctinomops macrotis*. http://www.mnh.si.edu/mna/image_info.cfm?species_id=223. Accessed 2 January, 2012.

Thomas, L., S.T. Buckland, E.A. Rexstad, J. L. Laake, S. Strindberg, S. L. Hedley, J. R. B. Bishop, T. A. Marques, and K. P. Burnham. 2010. Distance software: design and analysis of distance sampling surveys for estimating population size. Journal of Applied Ecology 47: 5-14. DOI: 10.1111/j.1365-2664.2009.01737.x

Texas Parks and Wildlife Department (TPWD). No Date. California Myotis (*Myotis californicus*). http://www.tpwd.state.tx.us/huntwild/wild/species/calmyotis/. Accessed 2 January, 2012.

USFWS (US Fish and Wildlife Service) Pacific Southwest Region. 2011. Monitoring Migratory Bird Take at Solar Power Facilities: An Experimental Approach.

USFWS (US Fish and Wildlife Service) Pacific Southwest Region. 2010a. Region 8 Interim Guidelines for the Development of a Project-Specific Avian and Bat Protection Plan for Solar Energy Plant and Related Transmission Facilities. http://www.energy.ca.gov/sitingcases/palmdale/documents/2011-02-02_Exhibits_FSA_TN-59585.pdf. Accessed 22 September, 2011

USFWS (US Fish and Wildlife Service). 2010b. Species by County Report. http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=32003 Accessed 29 December, 2010.

USFWS (US Fish and Wildlife Service) Pacific Southwest Region. 2010. Region 8 Interim Guidelines for the Development of a Project-Specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities. 15 Pages.

USFWS (US Fish and Wildlife Service) Nevada Fish and Wildlife Office. 2007. Protecting Burrowing Owls at Construction Sites in Nevada's Mojave Desert Region. Las Vegas, Nevada.

USFWS Utah Field Office. 1999. USFWS Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances. http://www.fws.gov/wyominges/Pages/Species/Species_SpeciesConcern/Raptors.html.

This page intended to be blank.

ARCADIS

Appendix A

Dead Bird/Nest Form and Animal/Bird Mortality Report

This page intended to be blank.

Dead Bird and Bat / Nest Form

Operation Area: (circle one)

1) Road 2) Transmission Line 3) Evaporation Pond 4) Solar Field

GPS Coordinates: _____

Species: _____

ID #: _____

Date: _____

Time: _____

Cause of Mortality (Circle one)

1) Collision with power line 2) Electrocution 3) vehicular collision 4) Other(explain)

Carcass Condition (circle one):

1) Fresh 2) Medium 3) non-scavenged carcass 4) Remnant

Finders Name: _____

Finders Phone: _____

Habitat description: _____

_____

Nest (circle one)

1) Active 2) Inactive

Number of Eggs/Hatchlings: _____

Comments: _____

_____

_____

Coincidental Animal/Bird Mortality Report

To: To Be Determined Date: _____

From: Name _____

GPS Location _____

Describe the species of the Animal or Bird that was mortally injured by on-site structures and/or vehicles.

_____

_____

If any bands or tags, please return to the U.S. Fish and Wildlife Service and write number and agency here.

_____

_____

Describe how the Animal or Bird was mortally injured by on-site structures and/or vehicles.

_____

_____

_____

Weather Conditions (e.g. rainy and cold, sunny and warm, etc.)

_____

_____

Circuit Name & Voltage _____

Specific Problem Location (e.g. Pole # / Address / Cross Streets, etc.)

_____

_____

Description of Terrain and Vegetation in Area (e.g. near agriculture area, dense city area, residential housing, etc.)

_____

_____

Please attach picture of the Animal or Bird if possible.

Appendix P

Decommissioning Plan

This page intended to be blank.

ARCADIS

Infrastructure · Water · Environment · Buildings

Imagine the result

K-Road Moapa Solar Generation Facility

Decommissioning Plan

January 2012

This page intended to be blank.

ARCADIS

Chad A. Martin, CWB
Principal Biologist

Tara Raabe
Biologist

This page intended to be blank.

1. Introduction **1**

1.1 Solar Facility Description 1

2. Regulatory Criteria **3**

3. Solar Facility Decommissioning **5**

3.1 Pre-decommissioning Activities 5

3.2 Above- and Below-Ground Facilities and Utilities 6

3.3 Hazardous Waste Management 6

3.4 Soil and Groundwater Sampling 7

3.5 Debris Management, Disposal, and Recycling 8

3.6 Post-Demolition Site Stabilization 8

4. Literature Cited **9**

Figures

Figure 1: Project Location 3

Figure 2: Proposed Project Facilities 4

Acronyms Used in the Report

BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
JSA	Job Safety Analysis
NEPA	National Environmental Policy Act
O&M	Operations and Maintenance
Project	K Road Moapa Solar Project
RCRA	Resource Conservation and Recovery Act
Reservation	Moapa River Indian Reservation
Travel Plaza	Moapa Travel Plaza
TSCA	Toxic Substances Control Act

1. Introduction

The K Road Moapa Solar Generation Facility (Project) has been proposed by the Bureau of Indian Affairs (BIA) on 2,153 acres of land within the Moapa River Indian Reservation (Reservation) in the Mojave Desert in Clark County, Nevada. The planned life of the Project is approximately 35 years and up to 50 years, with the possibility of continued operation. Properly maintained solar panels have a life expectancy of approximately 25- 30 years and can increase with equipment replacement and repowering; however a cost increase is associated with replacement and repowering. This decommission plan is written with assumption that upon the 50 year period, the Project will be permanently closed with no intentions of future operation. This decommission plan is applicable only to the solar facility footprint. The transmission lines will not be decommissioned because they will continue to transport electricity to the Moapa Travel Plaza (Travel Plaza).

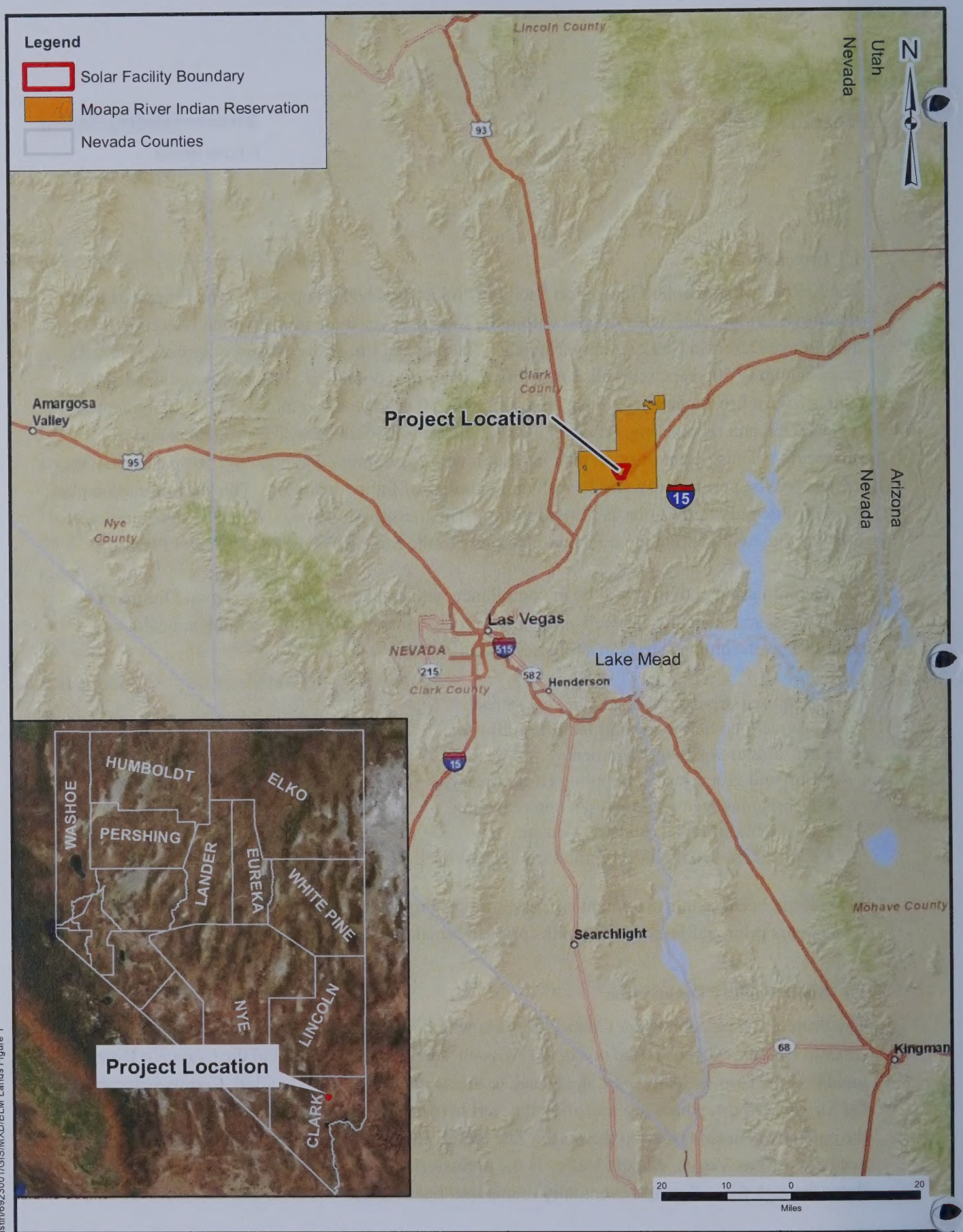
All decommission activities will be in compliance with any applicable laws, Tribal Ordinances, regulations, and standards, as well as ensuring environmental protection and public health and safety. This decommission plan addresses the following:

- Required pre-decommissioning activities;
- Above- and below-ground facilities/utilities;
- Hazardous waste management;
- Soil and groundwater sampling (if necessary);
- Debris management, disposal, and recycling;
- Post-demolition site stabilization; and
- Cost estimates of all decommissioning activities.

In addition, because this document addresses future Project actions, it will be reviewed and updated 3 to 5 years prior and finalized 6 months prior to scheduled decommissioning.

1.1 Solar Facility Description

The Project is located in Clark County, Nevada which extends over 8,091 square miles with Lincoln County, Nevada to the north, the Arizona state line to the east, and the Colorado River, including the Hoover Dam and Lake Mead, to the southeast (Figure 1). Clark County is located in the Mojave Desert, which is a transitional desert between the hot Sonoran Desert to the south and the cold Great Basin Desert to the north. The Reservation consists of 71,954 acres of land located northeast of Las Vegas. Moapa Valley is the prehistoric flood plain of the Muddy River, which flows through the valley and eventually drains into Lake Mead.



Map Document:Austin\6923001\GIS\MXD\BLM Lands Figure 1

ARCADIS	K Road Power San Diego, California K Road Moapa Solar Facility	Moapa River Indian Reservation Project Location Map	December 2011 FIGURE 1

The Project facilities would disturb an approximate total area of 2,153 acres of the Reservation (Figure 2). The solar arrays, substation, and operation and maintenance (O&M) building and parking would be contained within a 2,000 acre solar facility footprint; the up to 500kV transmission line corridor would impact approximately 100 acres and have a length of approximately 5.5 miles; the water line would impact approximately 3 acres and have length of approximately 1 mile; the 12kV transmission line would impact approximately 12 acres of land, half of which is currently an unimproved road, and have a length of approximately 3 miles. The Project location allows efficient connection of the energy from solar resources to existing transmission infrastructure. The selected site is adjacent to an existing transmission corridor that has a direct path to the Crystal substation. The Crystal substation itself lies within 5 miles of the Project's northwest boundary.

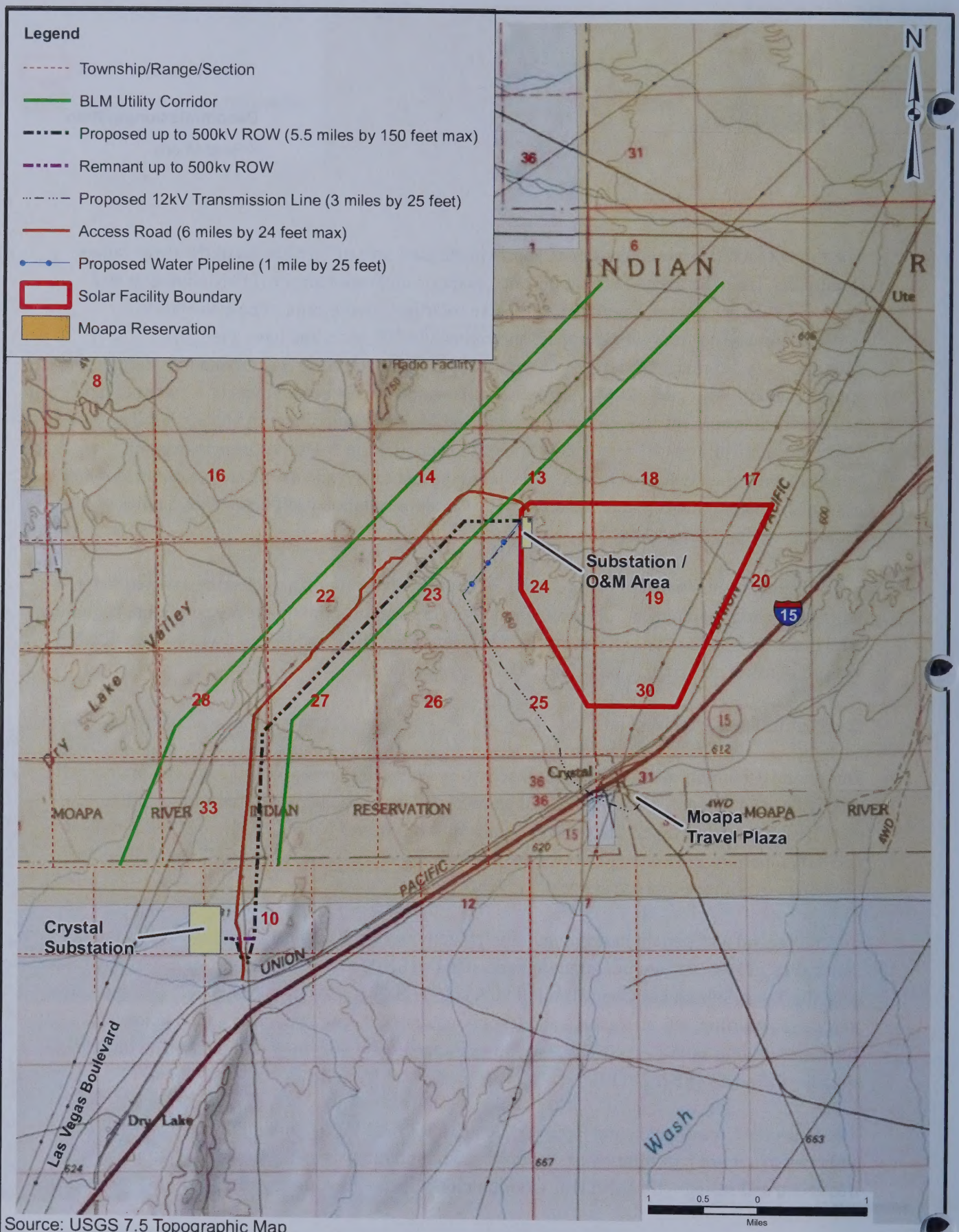
Construction is anticipated to begin 3Q/4Q 2012 after all environmental clearing and perimeter fencing has been completed. Construction will occur over an approximate 5 year period, beginning with Phase 1 in 2012. Phase 2 construction is planned for 2014, and Phase 3 will begin in 2015, with all construction completed in late 2016.

2. Regulatory Criteria

During the decommissioning process, all activities will need to be in compliance with all federal and Tribal regulations. All activities will be reviewed under the National Environmental Policy Act (NEPA) and the United States Environmental Protection Agency (EPA). Additional federal and Tribal permits may be required for the decommission process of the solar facility; therefore, coordination with appropriate agencies is highly recommended.

Several federal acts pertain to decommissioning activities involving hazardous wastes and toxic substances. These acts are important to understand so that all requirements are met. Among these acts, the Toxic Substances Control Act (TSCA) (15 U.S.C. §2601) provides the EPA with authority to require reporting, record-keeping and testing requirements and restrictions relating to chemical substances and/or mixtures. TSCA also addresses the production, importation, use and disposal of specific chemicals (EPA 2011a).

The Resource Conservation and Recovery Act (RCRA) (42 U.S.C. §6901) gives the EPA the authority to control hazardous waste from its generation till disposal, also including transportation, treatment, and storage (EPA 2011b). Coordination with the EPA throughout the life of the Project,



Source: USGS 7.5 Topographic Map

ARCADIS	K Road Power San Diego, California K Road Moapa Solar Facility	Moapa River Indian Reservation Proposed Project Facilities Map	February 2012 FIGURE 2

Map Document:Austin\6923001\GIS\MXD\BLM Lands Figure 1

including decommissioning, is critical so that the TSCA and RCRA are not violated and that both the public and the environment are not impacted by the Project.

3. Solar Facility Decommissioning

The procedures described for decommissioning are designed to promote public health and safety, environmental protection, and compliance with applicable regulations. It is assumed that decommissioning will begin approximately 35 years and up to 50 years after the onset of facility operation; however, if temporary closure is required for facility maintenance or other circumstances, the Bureau of Land Management (BLM), BIA, and other responsible federal, state, and local agencies will be notified within 24 hours. The Project's decommissioning plan may include sale of some of the facility components through used equipment marketing process, as well as, recycling a majority of facility components, if feasible.

This decommission plan assumes that all equipment and pertinent facilities within the solar facility will be removed. The transmission lines provide electricity to the Travel Plaza; therefore, these will not be removed. Any re-vegetation and reclamation activities required to return the solar facility area to a pre-construction state are also addressed in this plan as well as other plans applicable to the Project. These additional plans include:

- Noxious Weed Management Plan
- Habitat Restoration and Re-vegetation Plan

Above-ground structures will be removed through mechanical or other approved methods, and removed from the site to an approved recycling facility, landfill, or other designated location. Below-ground structures will be removed upon agency coordination, or may remain in place to minimize soil disturbance (agency approval). After all structural elements are removed; the ground surface will be re-contoured per agency and Tribal consultation.

3.1 Pre-decommissioning Activities

Pre-decommissioning activities will consist of preparing the solar facility area for demolition. An Environmental Site Assessment (ESA) will be conducted on the Project solar facility before any decommissioning activities occur. The ESA will document the existing conditions of the solar facility such as structure name, use, and location, presence of hazardous material within a structure

and use of the material, and the general description of the solar facility at that time. This documentation is important so that areas containing hazardous materials can be decommissioned appropriately.

Other pre-decommissioning activities include removing remaining residues from equipment, vehicles, and products such as fuel, hydraulic fluids, oil, etc., to reduce potential environmental and personnel exposure during decommissioning. All operational liquids and chemicals are expected to be removed and disposed of as discussed in Section 3.3. Hazardous material and petroleum containers, pipelines, and other similar structures shall be rinsed clean, when feasible, and the waste liquid collected for off-site disposal (Section 3.3). Designated locations for decommissioned structures, non-hazardous waste, and debris shall be established to facilitate the decommissioning process and off-site removal.

3.2 Above- and Below-Ground Facilities and Utilities

Structures that need to be broken down during decommissioning include the on-site substation, on-site O&M area, the perimeter fence, solar panels, and transformers. These structures will be dismantled and moved to designated areas for either a used-equipment market, off-site recycling center, or an approved landfill.

Below-ground facility/utility removal will be conducted per agency coordination and consistent with all applicable regulations. Below-ground facilities/utilities that potentially may be removed include pipelines, electricity lines, gas lines, concrete slabs, any partial underground fencing or walls. However, agencies may recommend that some or all below-ground facilities/utilities may be capped off and remain in place so that soil disturbance can be kept to a minimum. Any created holes or trenches will be backfilled with suitable material of similar consistency and permeability as the surrounding area. All excavated materials will be transported to designated locations with the above-ground materials until further off-site transportation.

3.3 Hazardous Waste Management

At the time of closure of the K Road Moapa Solar Project site, agency consultation with appropriate federal, state, and local agencies will occur. To ensure public and environmental health and safety, the Project area will be secured 24 hours each day until all decommissioning activities have reached completion. During decommissioning, a Job Safety Analysis (JSA) will be

completed for each activity to ensure equipment operations and operator safety. Hazardous wastes that potentially are present within the Project area consist of, but not limited to: hydraulic fluids, oils, paints, thinners, solvents, cleaners, batteries, sealants, and lubricants. Any containers, tanks, piping, and equipment associated with hazardous wastes will be treated as hazardous waste. All disposal and transportation of hazardous waste will be conducted under compliance with RCRA (42 U.S.C. §6901), and TSCA (15 U.S.C. §2601), and other regulations as needed.

In areas where no record of hazardous waste exposure occurred, a visual inspection can be conducted. However, if a concern is identified, then further evaluation of the area shall occur and the area or structure will be treated as hazardous waste, if necessary. Any used cleaning fluid will also be disposed of as hazardous waste. Unused chemicals can possibly be sold back to the suppliers or other purchasers. A licensed state waste contractor may be required to inspect all decommission cleanup efforts to ensure that all required laws and regulations have been met and to address any remaining requirements needed to successfully close the Project.

3.4 Soil and Groundwater Sampling

Soil sampling may be required after the removal of all buildings and structures to determine if there were any impacts below the surface. This will indicate a clean Project closure, as well as, ensure public and environmental health and safety. Investigations will be conducted in areas that have a high potential for soil contamination such as areas where buildings or structures contained hazardous materials or accumulated hazardous waste, and locations of any sumps, drains, septic tanks, or leach-fields, that may have been present or developed during Project operation. If sampling indicates soil impact, additional agency coordination will occur to "clean" up these areas and meet all laws and regulations.

Groundwater sampling will only be required if soil sampling indicates a threat to the groundwater after the removal of all above- and below-ground infrastructure. If groundwater sampling is required, agency coordination will occur to make sure all groundwater laws and regulations are met and sampling is conducted appropriately.

3.5 Debris Management, Disposal, and Recycling

All demolition debris will be placed in designated locations on-site. Each stockpile will be transported off-site to either a used equipment market, off-site recycling center, or approved landfill depending on the material type. If feasible, debris shall be broken down into smaller pieces so that transportation to off-site locations occurs by means of dump trucks, trailers, etc. Otherwise, larger means of transportation off-site may be required. Several recycling centers located in the Las Vegas area provide services to accommodate large recyclable items as well as recycling bins and transportation.

3.6 Post-Demolition Site Stabilization

After all removal of existing structures of the solar facility, the Project area will be restored to a natural gradient similar to pre-construction. Natural contours will be re-established to the extent practicable. The Project area location is in the Mojave Desert where the arid habitat takes a long while to restore to its original conditions. Therefore, when feasible, actions that reduce impact to the environment need to be taken. In other cases, restoration in the form of re-vegetation, soil amending, and invasive species management are mitigation measures considered for the Project.

Objectives of these mitigation measures are the following:

- Promote natural-appearing topography and reduce potential for erosion;
- Reduce the visual contrasts between disturbed and undisturbed areas;
- Restore habitat suitable to support cover and breeding opportunities for desert fauna; and
- Establish a non-native invasive weed management program that will identify means for non-native species eradication.

Details regarding these mitigation measures are addressed in additional plans applicable to Project restoration and conservation of the natural environment within and surrounding the Project area. These plans include a Noxious Weed Management Plan, and a Habitat Restoration and Re-vegetation Plan. These mitigation measures are recommended to be used during Project construction, operation, and decommissioning.

4. Literature Cited

United States Environmental Protection Agency (EPA). 2011a. Summary of the Toxic Substances Control Act. http://www.epa.gov/lawsregs/laws/tsca.html. Accessed December 9, 2011.

United States Environmental Protection Agency (EPA). 2011b. Summary of the Resource Conservation and Recovery Act. http://www.epa.gov/lawsregs/laws/rcrs.html. Accessed December 9, 2011.

This page intended to be blank.

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225